

A Catalogue of Equilateral Limit Curves that Are Not Circles

Compiled by Peter J. C. Moses, May 2026

Throughout, e_1 , e_2 , and e_3 denote the elementary symmetric functions in x , y , z , namely

$$e_1 = x + y + z$$

$$e_2 = yz + zx + xy$$

$$e_3 = xyz$$

The displayed equations are symmetric polynomial equations in terms of e_1 , e_2 , and e_3 . Where cubics that are indexed by K numbers in B. Gibert's Cubics in the Triangle Plane <http://bernard-gibert.fr/index.html> are noted, a preceding a denotes the anticomplement of the cubic, while a preceding c denotes the complement. (Both the complement and anticomplement of a cubic is a cubic.) Within each box, one or more numbers are followed by an equation. Each such number n represents the point $X(n)$, for $n < 20000$, in the Encyclopedia of Triangle Centers <https://faculty.evansville.edu/ck6/encyclopedia/etc.html>, and the equation is that of the equilateral limit curve.

59, 249, 250, 679, 765, 1016, 1101, 1110, 1168, 1252, 1262, 1275, 1318, 2065, 2149, 2226, 4076, 4564, 4567, 4570, 4590, 4600, 4601, 4620, 4998, 5379, 5382, 5383, 5384, 5385, 5388, 5627, 6064, 6065, 6066, 6100, 6185, 7012, 7035, 7045, 7115, 7128, 7339, 7340, 9139, 9154, 9476, 9477, 9503, 9505, 9506, 10415, 10419, 10422, 10426, 10428, 10630, 11071, 11075, 11079, 12028, 14452, 14587, 14595, 14629, 14859, 15378, 15379, 15380, 15381, 15382, 15383, 15384, 15385, 15386, 15387, 15388, 15391, 15392, 15395, 15396, 15397, 15398, 15399, 15401, 15402, 15403, 15404, 15405, 15406, 15407, 15734, 15742, 18020, 18263, 18267, 19653

$$e_2^2 - 4e_1e_3 = 0$$

402, 9269, 9276, 10995, 11052, 11053, 11903, 11906, 13158, 14122, 14566, 18132, 18310

$$e_1^3 - 5e_1e_2 + 18e_3 = 0 \text{ (cK219)}$$

435

$$13e_1^4 - 72e_1^2e_2 + 81e_2^2 + 54e_1e_3 = 0$$

437

$$5e_1^4 - 36e_1^2e_2 + 81e_2^2 - 54e_1e_3 = 0$$

446, 6161, 6546, 11123, 11124, 14824, 14825

$$5e_1^3 - 18e_1e_2 + 27e_3 = 0$$

457

$$e1^4 - 18*e1^2*e2 + 81*e2^2 - 108*e1*e3 = 0$$

764, 3081, 3249, 5489, 6545, 6652, 8027, 8028, 8029, 8030, 8031, 8032, 8034, 8042, 14637, 16220

$$e1^3 - 27*e3 = 0 \text{ (K656, aK700)}$$

865, 866, 867, 868, 1645, 1646, 1647, 1648, 1649, 1650, 1984, 2086, 2087, 2088, 3126, 3134, 3137, 3138, 3139, 3140, 3141, 3143, 3150, 3251, 3675, 4089, 4124, 4375, 4448, 4530, 4543, 5664, 6544, 8562, 9176, 10413, 11183, 11909, 14010, 14401, 14409, 14433, 14434, 14437, 14478, 14694, 16186, 16507, 17435, 18308, 18309, 18311, 18320, 18507, 18866, 18867, 18868, 18869, 19945

$$e1^3 - 4*e1*e2 + 9*e3 = 0 \text{ (K219, cK015)}$$

874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 1022, 1023, 1024, 1025, 1026, 1027, 1981, 1983, 2283, 2284, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 3570, 3572, 3573, 3657, 3658, 4049, 4169, 4226, 4230, 4235, 4236, 4237, 4238, 4240, 4241, 4242, 4243, 4244, 4246, 4249, 4250, 4444, 4585, 5118, 5466, 5467, 5468, 5502, 6548, 7435, 7437, 7450, 7451, 7452, 7460, 7461, 7462, 7463, 9178, 10097, 10099, 10411, 10412, 11634, 11848, 13589, 14380, 14582, 14590, 14591, 14592, 14613, 14777, 14959, 14960, 14966, 14977, 15328, 15329, 15418, 15421, 15475, 15543, 15554, 16237, 17404, 17780, 17933, 17934, 17935, 17936, 17937, 17941, 17942, 17943, 17944, 17945, 17998, 18000, 18001, 18002, 18011, 18013, 18014, 18015, 18305, 18508, 18808, 19515

$$e1*e2 - 9*e3 = 0 \text{ (K015, aK219)}$$

1052, 1053, 2957, 2958, 17036, 18285

$$e1^4 - 6*e1^2*e2 + e2^2 + 8*e1*e3 = 0$$

1090, 5532, 7336

$$e1^4 - 8*e1^2*e2 + 16*e2^2 - 128*e1*e3 = 0$$

1116, 1640, 1641, 1642, 1643, 1644, 1651, 6041, 7740, 8371, 9171, 9175, 9177, 10994, 11182, 11251, 11619, 11633, 12113, 12418, 12438, 12583, 12626, 12668, 12696, 12789, 12791, 12794, 12795, 12797, 12798, 14205, 14421, 14474, 14475, 14476, 14477, 14809, 16129, 18312, 18556

$$e1^3 - 6*e1*e2 + 27*e3 = 0 \text{ (K1310)}$$

1117, 6634, 11074, 11607, 14366, 14887, 15555

$$e1^2*e2^2 + e2^3 - 4*e1^3*e3 = 0$$

1138, 2109, 2111, 2113, 2115, 2117, 3446, 3447, 6630, 7136, 7164, 7315, 7329, 8046, 8047, 8431, 8494, 9217, 9265, 9282, 9295, 9322, 9325, 9357, 9361, 9387, 9390, 9394, 9395, 9424, 9452, 9473, 9499, 9500, 9510, 13485, 13573, 13574, 14364, 15351, 18127, 18783, 18795

$$e2^2 + e1*e3 = 0$$

1391, 18771

$$5*e2^2 - 16*e1*e3 = 0$$

1521, 1553, 1554, 2683, 2684, 2685, 6070, 6071, 6072, 6073, 6074, 6075, 6076, 6077, 14505, 14506, 14507

$$e1^4 + 8*e1^2*e2 - 48*e2^2 + 288*e1*e3 = 0$$

1550, 1551, 1552, 1567, 6633, 7468, 7471, 7472, 7473, 7475, 7476, 7477, 7479, 7480, 7482, 9179, 9181, 9182, 12833, 13137, 14190, 14194, 14196, 14197, 14198, 14201, 14202, 14203, 14221, 14607, 14999, 16068, 16076, 16083, 16087, 16088, 16092, 16094, 17948, 17953, 17955, 17960, 17964, 17969, 17986

$$e1^2*e2 - 6*e2^2 + 9*e1*e3 = 0$$

1618

$$16*e1^2*e2 - e2^2 - 16*e1*e3 = 0$$

2132, 2142, 2144, 5671, 5677, 5680, 8443, 8505, 14884, 14888

$$e1^4*e2 - 2*e1^2*e2^2 - e2^3 - 2*e1^3*e3 = 0$$

2133, 2143, 2145, 7327, 7328, 8487

$$e1*e2^4 - 2*e1^2*e2^2*e3 - 2*e2^3*e3 - e1^3*e3^2 = 0$$

2612, 2625, 2633, 2639, 2644, 5375, 6163, 6631, 8933, 8934, 9218, 9266, 9296, 9323, 9326, 9358, 9362, 9410, 9416, 9425, 9428, 9453, 9460, 9467, 9470, 9514, 10001, 10416, 10421, 10424, 13140, 14909, 14911, 14993, 15295, 15477, 15727, 15898, 15899, 15900, 18034, 19330

$$e1^2*e2 - 4*e2^2 + 2*e1*e3 = 0$$

3154, 14112, 14113, 14114, 14115, 14116, 14117, 14120, 14858

$$2*e1^4 - 11*e1^2*e2 + 12*e2^2 + 9*e1*e3 = 0$$

3233, 3234, 6549, 12079, 15630, 15631, 15632, 15633, 15634, 15635, 15636, 15637, 15638, 15639
 $e1^2*e2 - 4*e2^2 + 27*e1*e3 = 0$

3568, 13471, 17511
 $e1^4 - 5*e1^2*e2 + 3*e2^2 + 9*e1*e3 = 0$

4618, 4638, 5376, 5377, 5378, 5381, 5387, 9268, 9273, 9274, 14147, 18879
 $e2^3 - 4*e1*e2*e3 + 9*e3^2 = 0$

4619, 6632
 $e2^3 - 27*e3^2 = 0$

5592, 8151, 14000
 $13*e1^3 - 45*e1*e2 + 54*e3 = 0$

5649, 6035, 9170
 $e2^3 - 6*e1*e2*e3 + 27*e3^2 = 0$

5652, 7417, 7418, 7422, 7423, 7425, 7427, 7429, 7432, 7433, 7434, 7439, 7440, 7441, 7442, 7443, 7444, 7445,
7446, 7447, 7448, 7454, 7455, 7456, 7457, 7458, 7459, 8723, 9168, 11050, 14126, 14127, 14812, 14898,
16501, 16505
 $4*e1^3 - 15*e1*e2 + 27*e3 = 0$ (aK1310)

5653, 14699, 14932, 14933, 15566
 $8*e1^5 - 48*e1^3*e2 + 63*e1*e2^2 + 54*e1^2*e3 - 81*e2*e3 = 0$

5670, 8432, 8440, 8504, 8518
 $e1^6*e2^2 - 5*e1^4*e2^3 - e1^2*e2^4 + e2^5 + e1^7*e3 - e1^5*e2*e3 + 11*e1^3*e2^2*e3 +$
 $5*e1*e2^3*e3 + 4*e1^4*e3^2 = 0$

5676
 $e1^9*e2^4 - 4*e1^7*e2^5 + 2*e1^5*e2^6 - 4*e1^3*e2^7 - 3*e1*e2^8 - 2*e1^10*e2^2*e3 +$
 $2*e1^8*e2^3*e3 + 28*e1^6*e2^4*e3 - 4*e1^4*e2^5*e3 - 2*e1^2*e2^6*e3 + 2*e2^7*e3 - e1^11*e3^2$
 $+ 4*e1^9*e2*e3^2 - 2*e1^7*e2^2*e3^2 - 44*e1^5*e2^3*e3^2 - 13*e1^3*e2^4*e3^2 - 8*e1^8*e3^3 -$
 $16*e1^6*e2*e3^3 = 0$

5912, 14934, 16338, 16339, 16340, 16341

$$4*e1^4 - 21*e1^2*e2 + 18*e2^2 + 27*e1*e3 = 0$$

5914, 5915

$$4*e1^4 - 19*e1^2*e2 + 4*e2^2 + 27*e1*e3 = 0$$

5954, 6547

$$5*e1^4 - 24*e1^2*e2 + 16*e2^2 + 32*e1*e3 = 0$$

6098, 6328, 14354, 15729, 19610, 19618

$$e1^2*e2^2 - 4*e2^3 + e1^3*e3 = 0$$

6162

$$5*e1^4*e2 - 22*e1^2*e2^2 + 25*e2^3 - 20*e1^3*e3 + 36*e1*e2*e3 + 108*e3^2 = 0$$

6164, 7137, 9262, 9267, 9293, 9299, 9389, 9392, 9396, 9469, 9472, 10417, 11070, 14451, 15390, 15732, 16361, 16364, 18264, 18781, 19619

$$e1*e2^2 - 4*e1^2*e3 + 2*e2*e3 = 0$$

6166

$$5*e1^6 - 38*e1^4*e2 + 69*e1^2*e2^2 + 12*e2^3 + 84*e1^3*e3 - 324*e1*e2*e3 + 324*e3^2 = 0$$

8486, 8488, 8493, 8503

$$e1^2*e2^6 + e2^7 - 5*e1^3*e2^4*e3 - e1*e2^5*e3 - e1^4*e2^2*e3^2 + 11*e1^2*e2^3*e3^2 + 4*e2^4*e3^2 + e1^5*e3^3 + 5*e1^3*e2*e3^3 = 0$$

8574, 8578, 10278, 11193, 11904, 11915, 15766, 15774, 15775, 19882

$$e1^3 - 9*e1*e2 + 54*e3 = 0$$

8784, 8853, 13187

$$e1^5 + 4*e1^3*e2 - 4*e1*e2^2 - 12*e1^2*e3 + 8*e2*e3 = 0$$

9164, 13480, 16934

$$8*e2^2 - 27*e1*e3 = 0$$

9165

$$35*e1^4 - 172*e1^2*e2 + 128*e2^2 + 216*e1*e3 = 0$$

9180, 10103, 14191, 14220, 14223, 14224, 14225, 14606, 14998, 15453, 15469, 16069, 16075

$$e1*e2^2 - 6*e1^2*e3 + 9*e2*e3 = 0$$

9183

$$e1^5 - 20*e1^3*e2 + 48*e1*e2^2 + 288*e1^2*e3 - 864*e2*e3 = 0$$

9270

$$e1^4*e2 + 9*e1^2*e2^2 - 54*e2^3 - 63*e1^3*e3 + 297*e1*e2*e3 - 486*e3^2 = 0$$

9271

$$e2^3 - 5*e1*e2*e3 + 18*e3^2 = 0$$

9272

$$e1^2*e2^2 + 5*e2^3 - 40*e1*e2*e3 + 144*e3^2 = 0$$

9474, 9501

$$9*e1^2*e2 + 16*e2^2 - 4*e1*e3 = 0$$

9504

$$9*e1*e2^2 + 16*e1^2*e3 - 4*e2*e3 = 0$$

10189, 19947

$$5*e1^3 - 27*e1*e2 + 108*e3 = 0 \text{ (cK700)}$$

10190, 10196

$$7*e1^3 - 27*e1*e2 + 54*e3 = 0 \text{ (K700, cK656)}$$

10279, 11247, 15782, 15795

$$e1^3 + 9*e1*e2 - 108*e3 = 0$$

10280

$$7*e1^3 - 45*e1*e2 + 216*e3 = 0$$

10567, 11049, 11905, 11914, 13164, 13448, 14028, 15353, 18313, 19955, 19957, 19961, 19964, 19965

$$5*e1^3 - 21*e1*e2 + 54*e3 = 0 \text{ (cK1310)}$$

10688, 14480, 14508, 14509, 14510, 14511, 14512, 14513, 14514, 14515

$$32*e1^2*e2 - 3*e2^2 - 36*e1*e3 = 0$$

11595, 14052

$$8*e2^2 - 25*e1*e3 = 0$$

11751, 14611

$$25*e1^2*e2 - 2*e2^2 - 27*e1*e3 = 0$$

11831, 11839, 11897, 16190, 16210, 16211, 18958

$$5*e1^3 - 24*e1*e2 + 81*e3 = 0$$

11832, 15183

$$3*e1^3 - 14*e1*e2 + 45*e3 = 0$$

11845, 11852, 11885, 11911, 16212

$$4*e1^3 - 21*e1*e2 + 81*e3 = 0$$

11853

$$2*e1^3 - 11*e1*e2 + 45*e3 = 0$$

11912

$$7*e1^3 - 33*e1*e2 + 108*e3 = 0$$

12003

$$7*e1^4 - 8*e1^2*e2 - 80*e2^2 + 96*e1*e3 = 0$$

12064

$$9*e1^5 - 144*e1^3*e2 + 256*e1*e2^2 + 512*e1^2*e3 - 1024*e2*e3 = 0$$

12065

$$4*e1*e2^3 - 7*e1^2*e2*e3 - 16*e2^2*e3 + 27*e1*e3^2 = 0$$

12066

$$2*e2^3 - 7*e1*e2*e3 + 9*e3^2 = 0$$

12067

$$13*e2^4 - 72*e1*e2^2*e3 + 81*e1^2*e3^2 + 54*e2*e3^2 = 0$$

12068

$$2*e1^4 - 13*e1^2*e2 + 24*e2^2 - 9*e1*e3 = 0$$

12076, 12078, 15914

$$2*e1^5 - 3*e1^3*e2 - 11*e1^2*e3 + 16*e2*e3 = 0$$

12181, 12347, 12369, 12729, 12752, 12790, 12796

$$e1^5 + 4*e1^3*e2 + 4*e1*e2^2 + 3*e1^2*e3 + 9*e2*e3 = 0$$

13179, 13212, 13268, 13281

$$e1^5 - 10*e1^3*e2 + 24*e1*e2^2 + 9*e1^2*e3 - 27*e2*e3 = 0$$

13264

$$4*e1^5 - 30*e1^3*e2 + 48*e1*e2^2 + 63*e1^2*e3 - 144*e2*e3 = 0$$

13291

$$e1^5 - 6*e1^3*e2 + 6*e1*e2^2 + 9*e1^2*e3 - 9*e2*e3 = 0$$

13495

$$e1^3*e2^4 - 4*e1*e2^5 - 5*e1^4*e2^2*e3 + 24*e1^2*e2^3*e3 - 9*e2^4*e3 + 3*e1^5*e3^2 - 18*e1^3*e2*e3^2 = 0$$

14393, 14423

$$e1^6 + 12*e1^4*e2 + 54*e1^3*e3 - 648*e1*e2*e3 + 729*e3^2 = 0$$

14441, 14442, 14443, 14444

$$e1^5 - 4*e1^3*e2 + 27*e1^2*e3 - 27*e2*e3 = 0$$

14536

$$5*e2^2 + 12*e1*e3 = 0$$

14588, 14589

$$5*e1^2*e2 - 2*e2^2 + 25*e1*e3 = 0$$

14695

$$16*e1^5 - 80*e1^3*e2 + 63*e1*e2^2 + 108*e1^2*e3 - 54*e2*e3 = 0$$

14835

$$e1^6 - 12*e1^4*e2 + 48*e1^2*e2^2 - 64*e2^3 - 2*e1^3*e3 + 8*e1*e2*e3 + 9*e3^2 = 0$$

14846

$$32*e1^4*e2 - 189*e1^2*e2^2 + 243*e2^3 + 36*e1^3*e3 = 0$$

14851

$$8*e1^4 - 63*e1^2*e2 + 108*e2^2 + 54*e1*e3 = 0$$

14967, 17709

$$2*e1^3 - 7*e1*e2 + 9*e3 = 0 \text{ (aK015)}$$

15184

$$3*e1^3 - 13*e1*e2 + 36*e3 = 0$$

15354

$$2*e1^5 - 21*e1^3*e2 + 36*e1*e2^2 + 135*e1^2*e3 - 324*e2*e3 = 0$$

15410

$$e1*e2^4 - 8*e1^2*e2^2*e3 + 11*e2^3*e3 + 16*e1^3*e3^2 - 44*e1*e2*e3^2 + 72*e3^3 = 0$$

15773

$$e1^6 + 9*e1^4*e2 - 243*e1^2*e2^2 + 729*e2^3 + 594*e1^3*e3 - 2430*e1*e2*e3 + 2916*e3^2 = 0$$

15786

$$5*e1^3 - 9*e1*e2 - 54*e3 = 0$$

15790

$$e1^6 - 36*e1^4*e2 + 324*e1^2*e2^2 - 729*e2^3 - 459*e1^3*e3 + 1701*e1*e2*e3 - 1458*e3^2 = 0$$

15791

$$7*e1^6 - 117*e1^4*e2 + 567*e1^2*e2^2 - 729*e2^3 - 54*e1^3*e3 - 486*e1*e2*e3 + 2916*e3^2 = 0$$

16104

$$8*e2^2 + 3*e1*e3 = 0$$

16933

$$4*e1^4 - 18*e1^2*e2 + 8*e2^2 + 27*e1*e3 = 0$$

17991, 17993, 18005, 18007, 18009

$$e1^3*e2 + 12*e1*e2^2 - 9*e1^2*e3 + 108*e2*e3 = 0$$

18318

$$e1^4*e2 - e1^2*e2^2 - 3*e2^3 - 4*e1^3*e3 + 6*e1*e2*e3 - 27*e3^2 = 0$$

18780

$$13*e1^5 - 64*e1^3*e2 + 64*e1*e2^2 + 160*e1^2*e3 - 256*e2*e3 = 0$$

19223

$$e1^4*e2^2 - 8*e1^2*e2^3 + 16*e2^4 + 16*e1^5*e3 + 44*e1^3*e2*e3 - 432*e1*e2^2*e3 + 1728*e1^2*e3^2 - 432*e2*e3^2 = 0$$

19401

$$80*e1^5 - 28*e1^3*e2 - 16*e1*e2^2 + 177*e1^2*e3 - 36*e2*e3 = 0$$

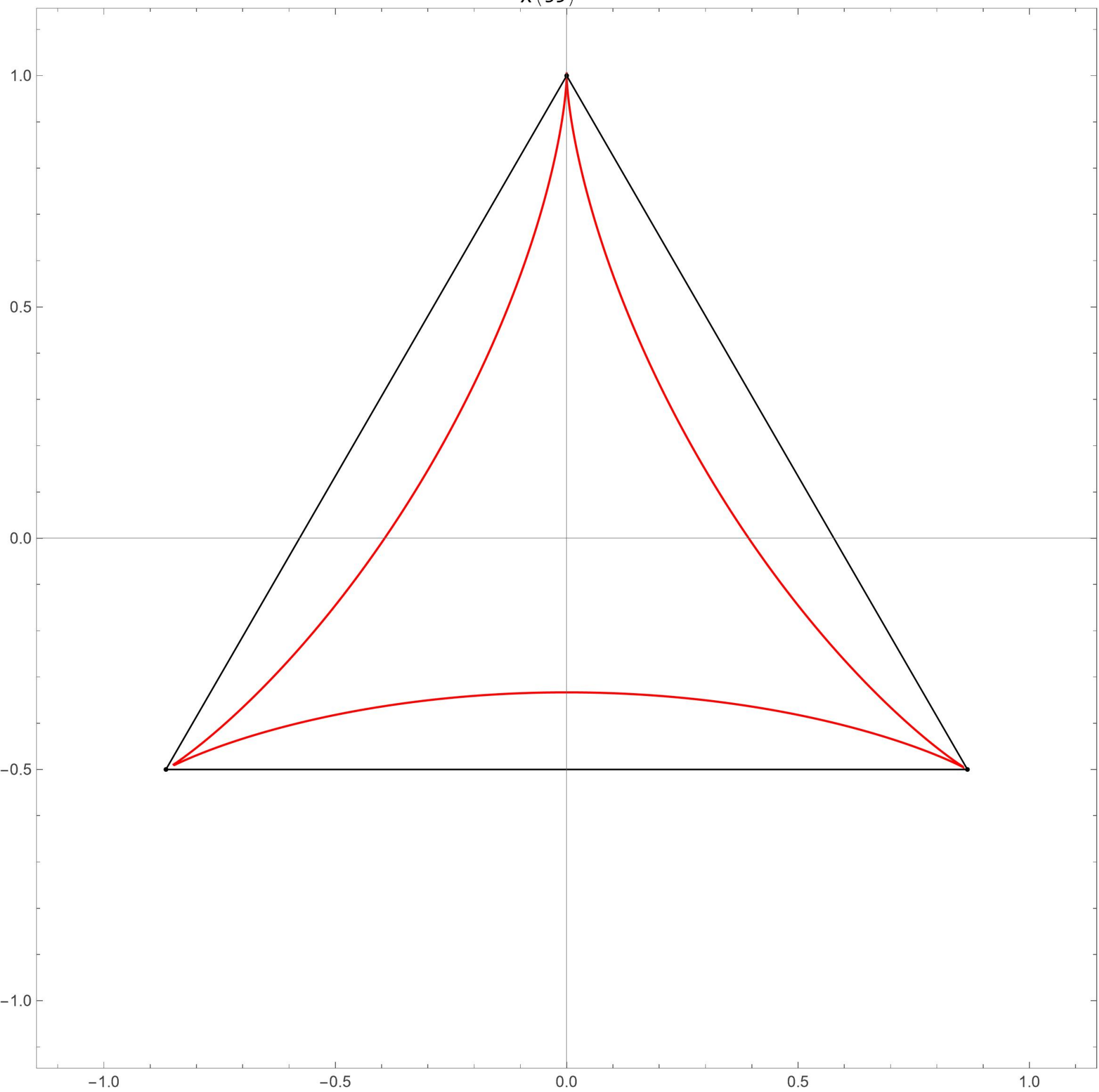
19948

$$23*e1^3 - 99*e1*e2 + 270*e3 = 0$$

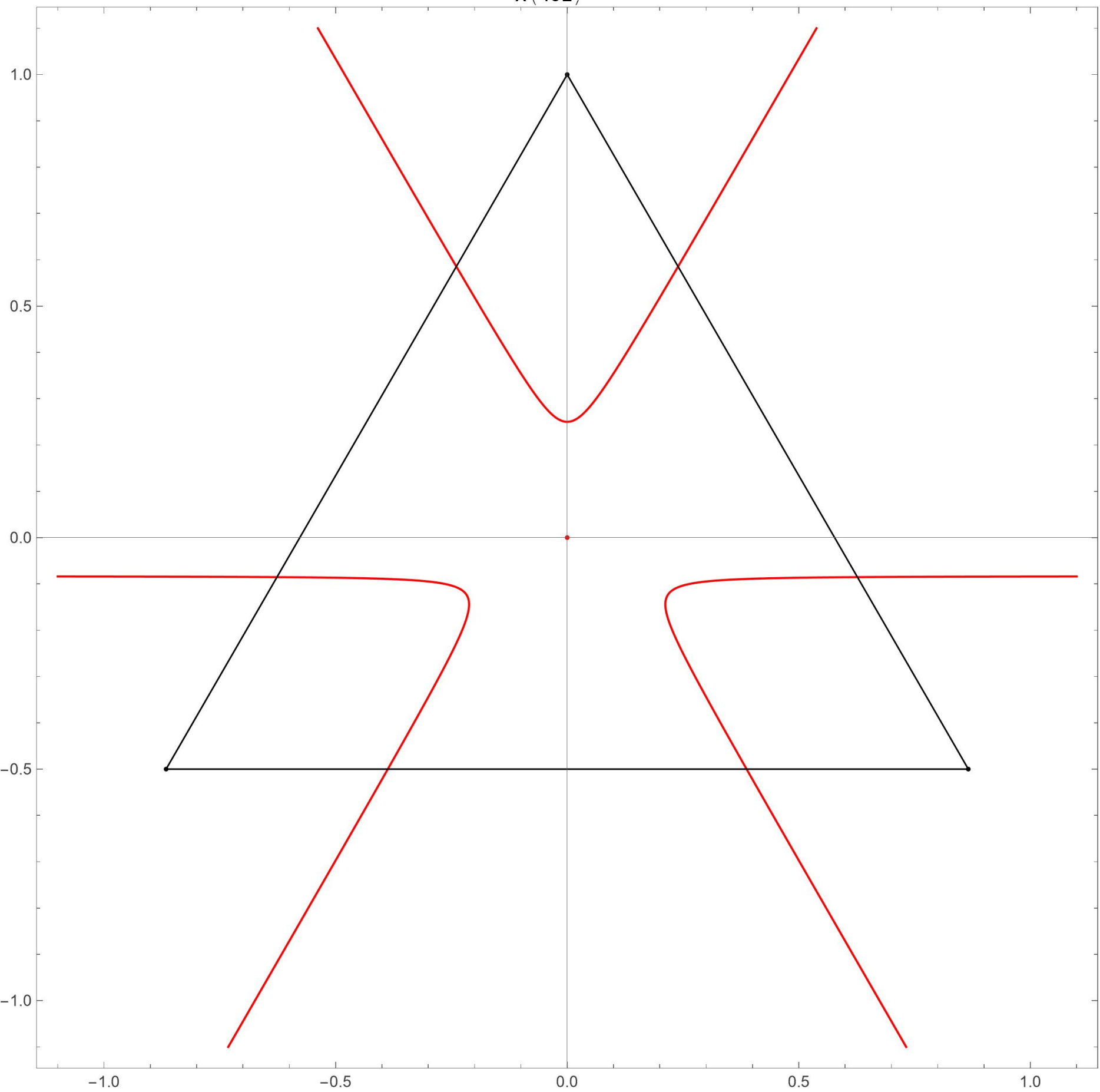
19949

$$13*e1^3 - 63*e1*e2 + 216*e3 = 0$$

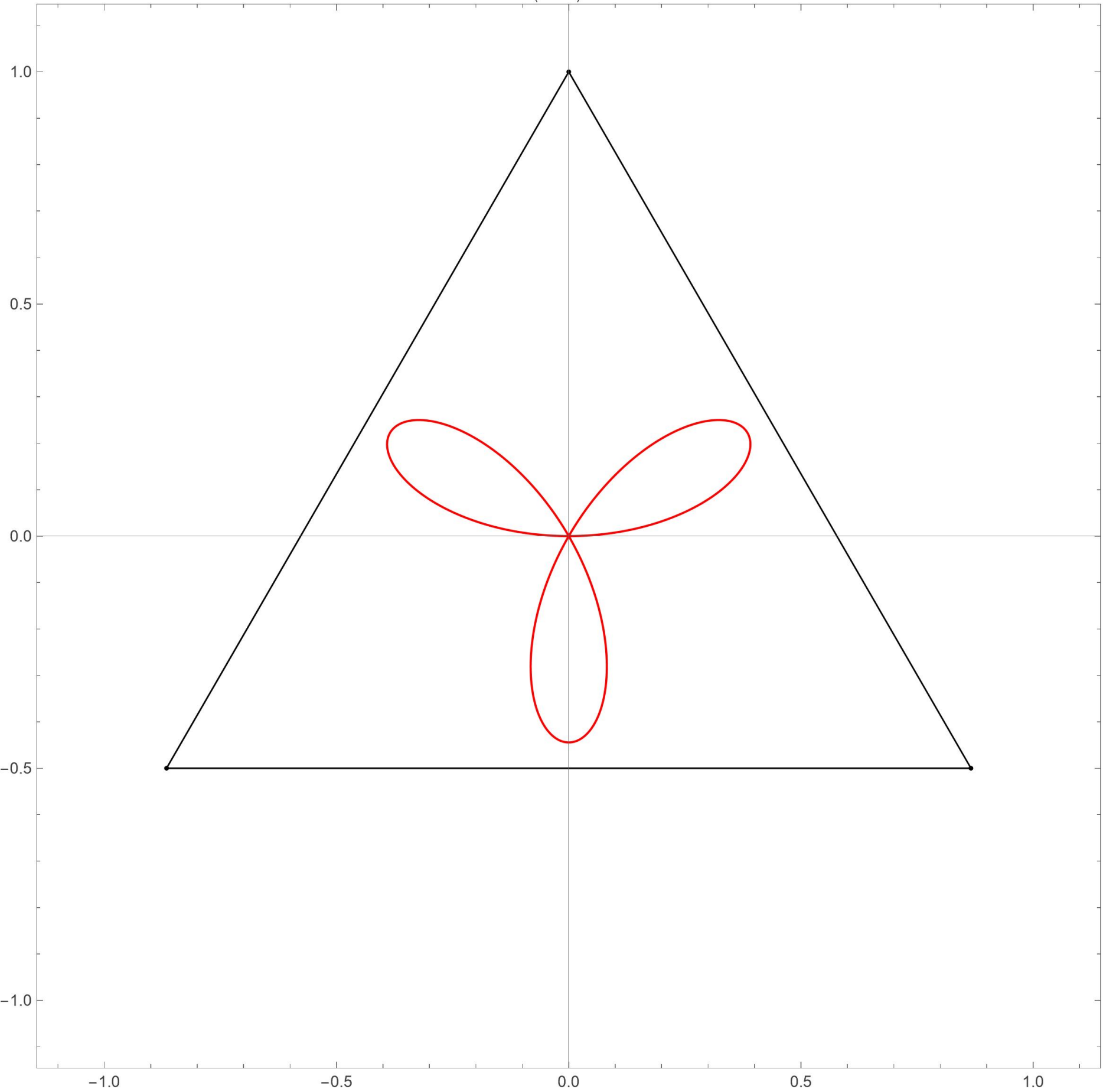
X (59)



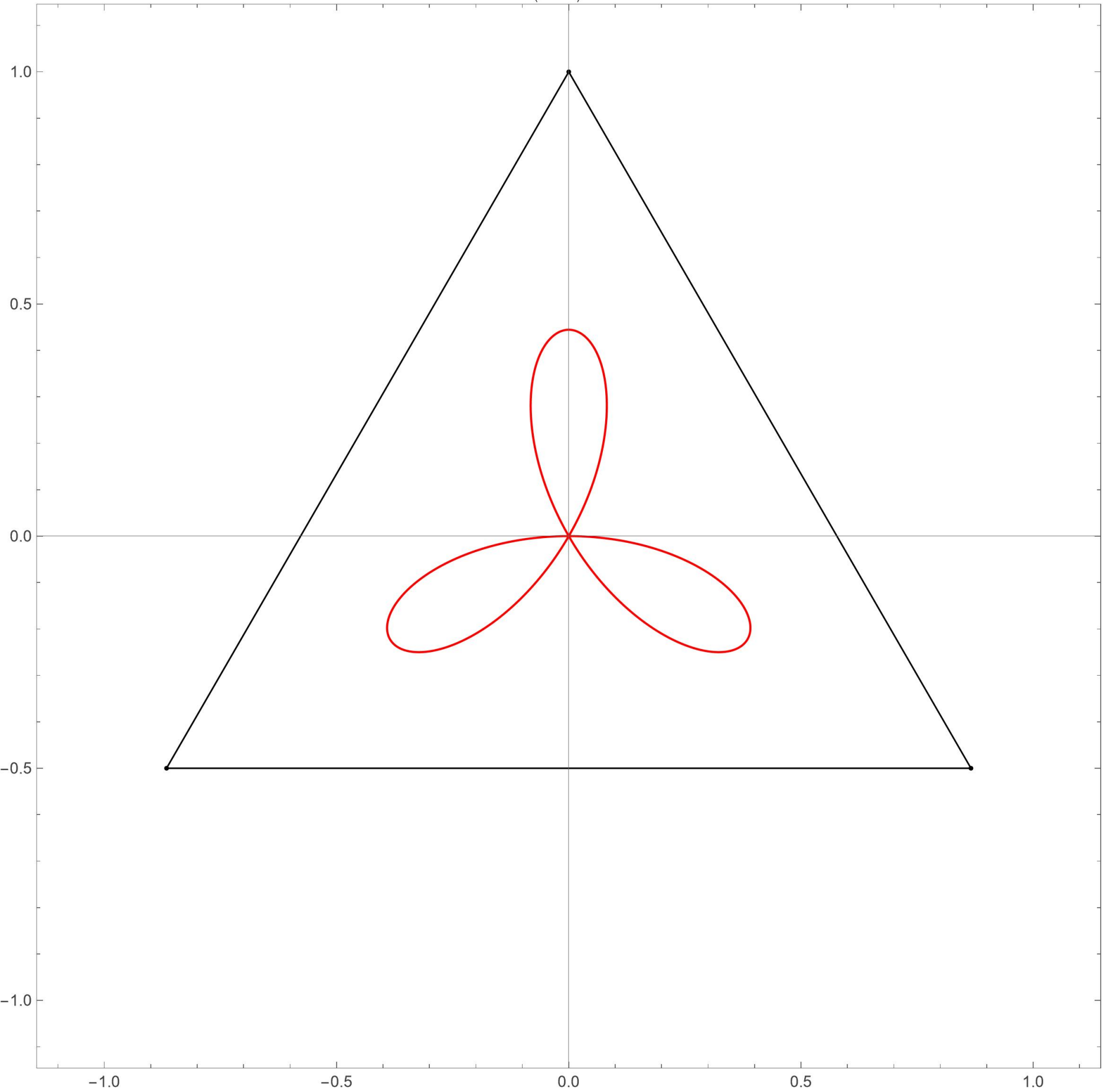
X (402)



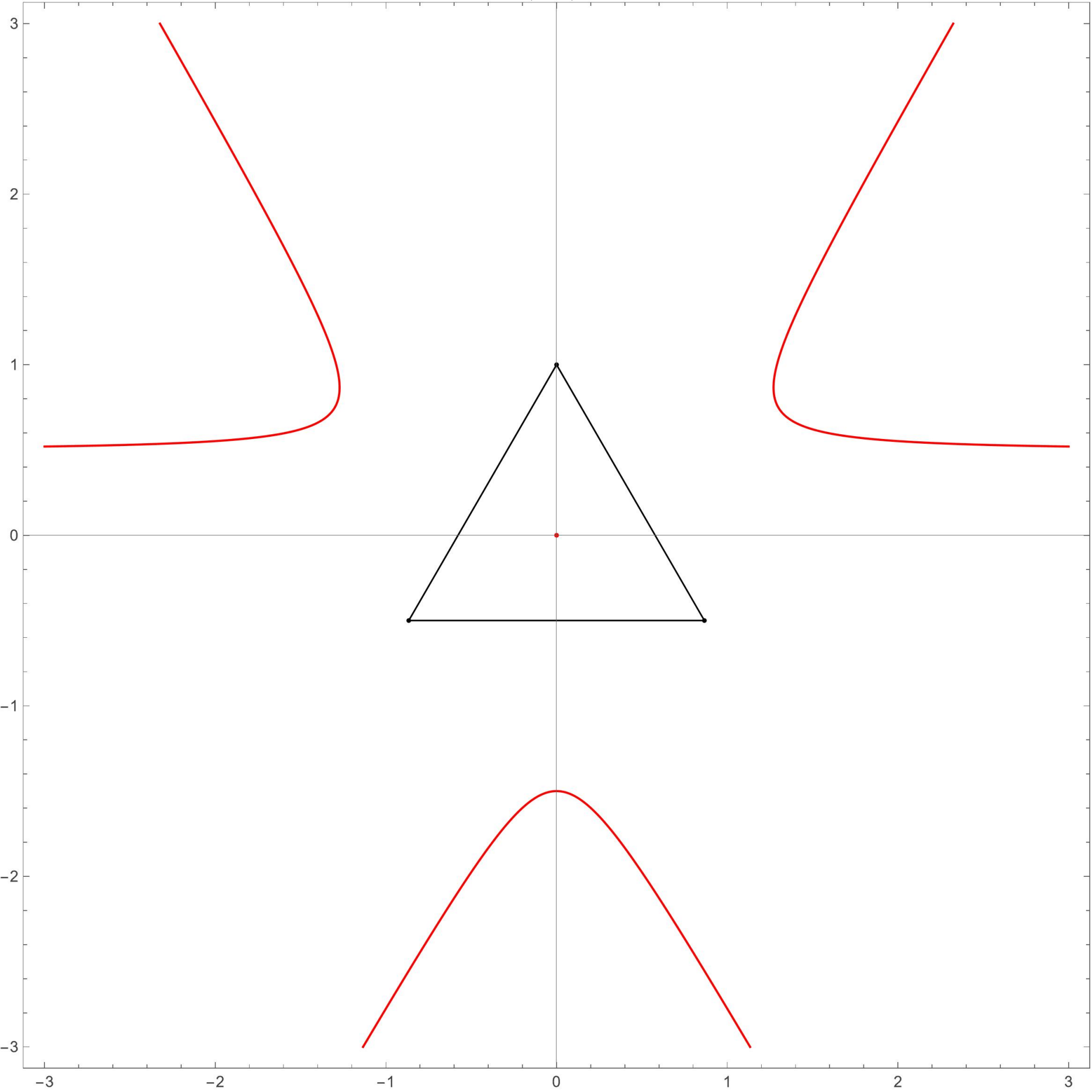
X (435)



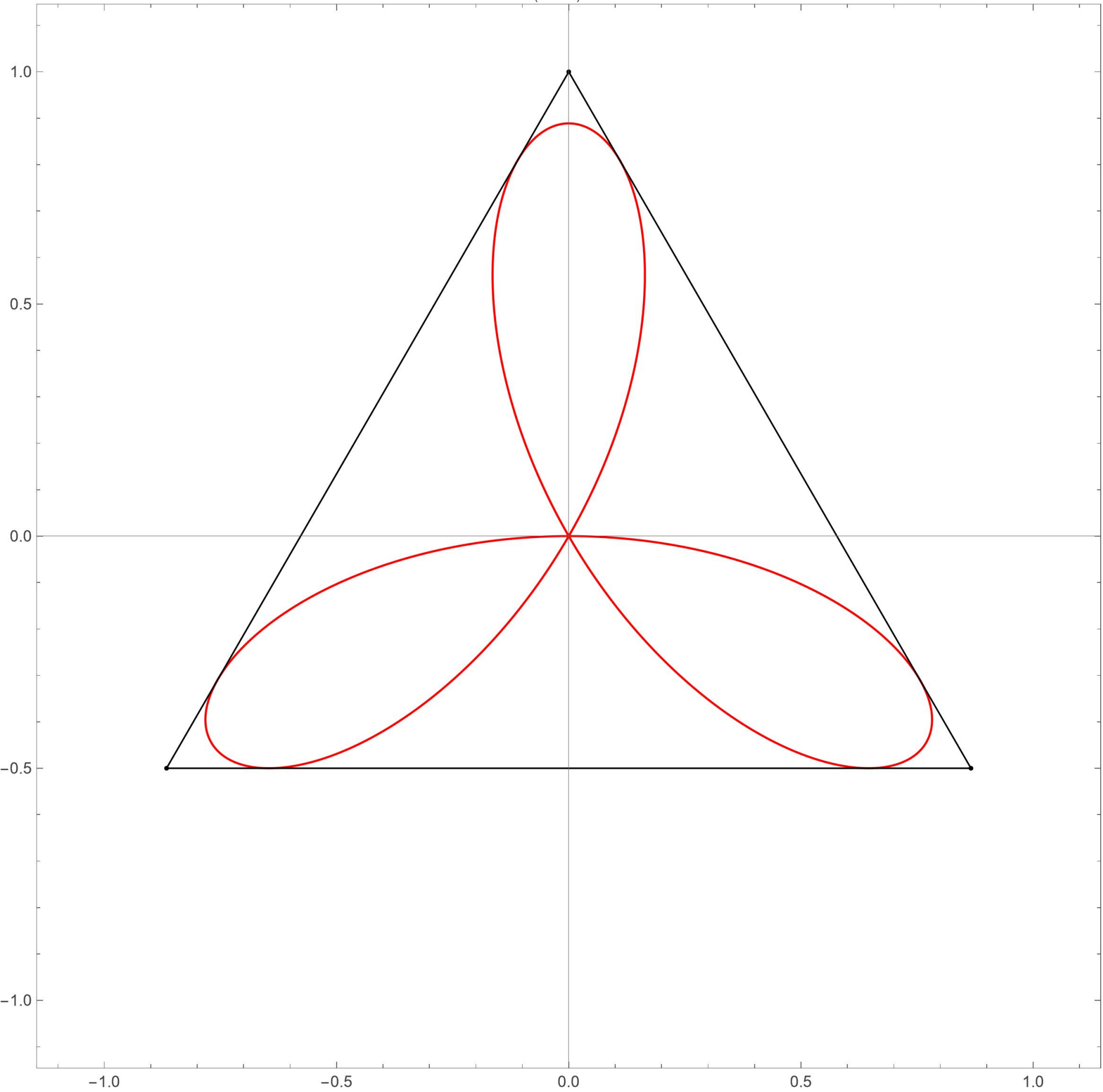
X (437)



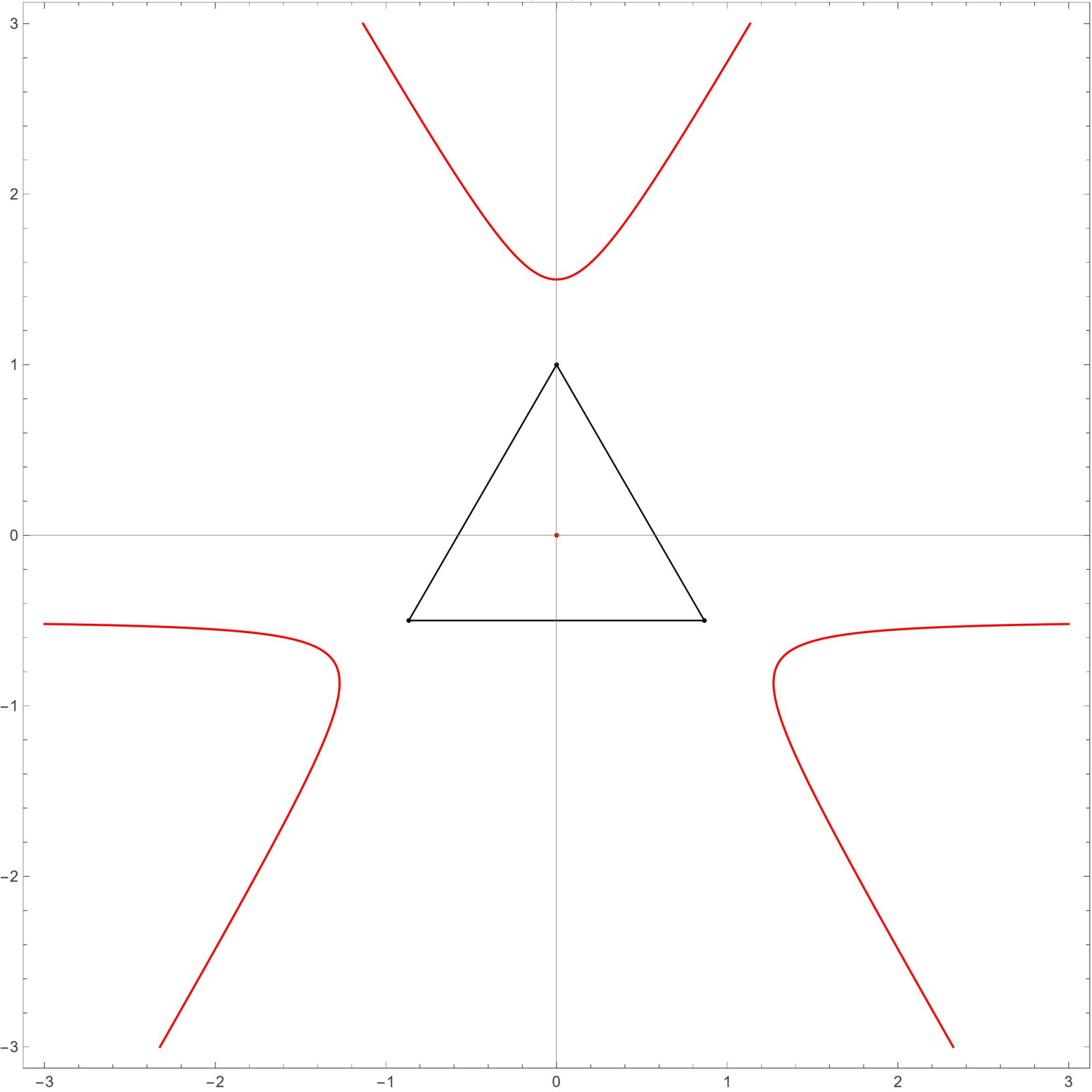
X (446)



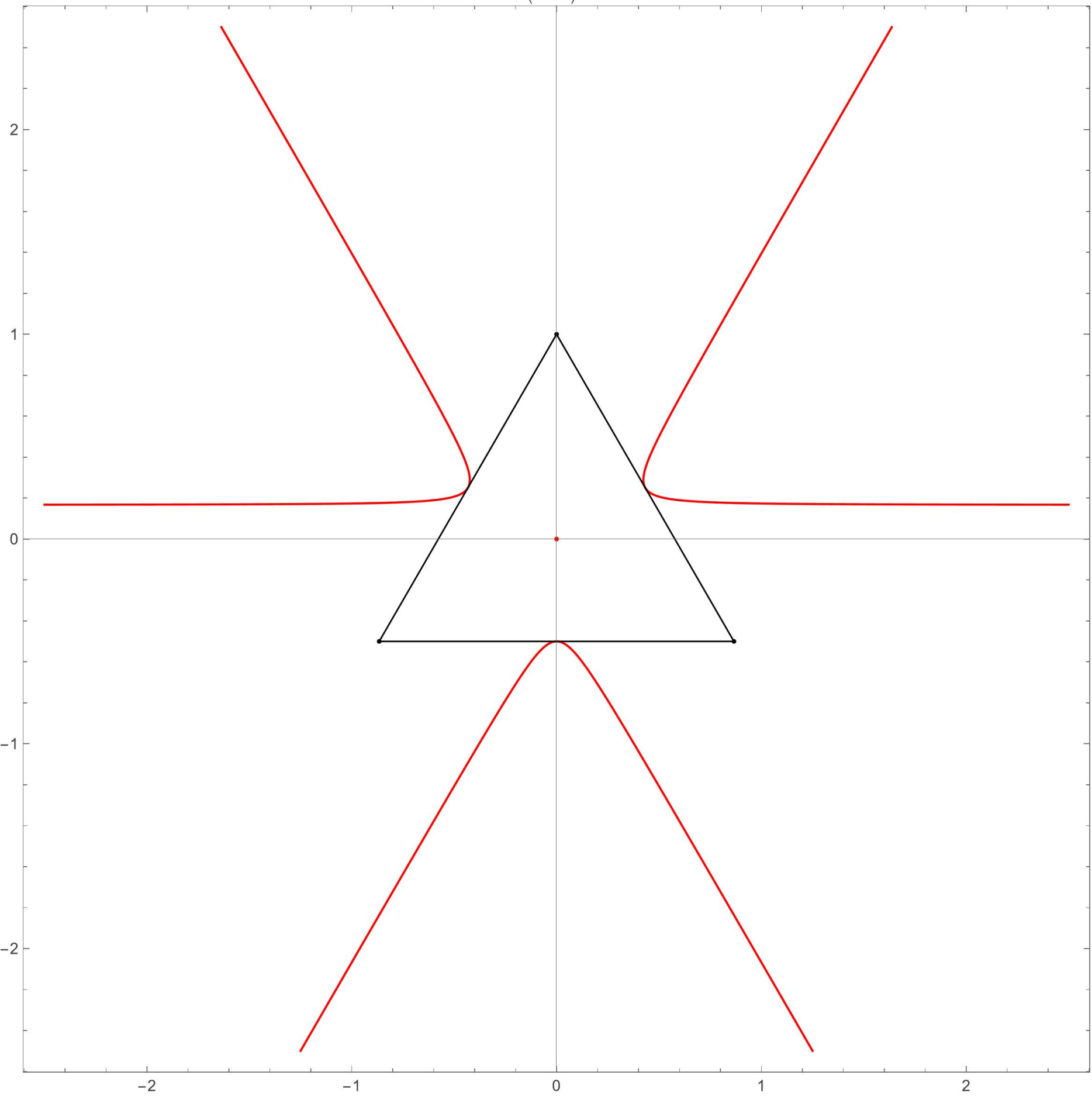
X (457)



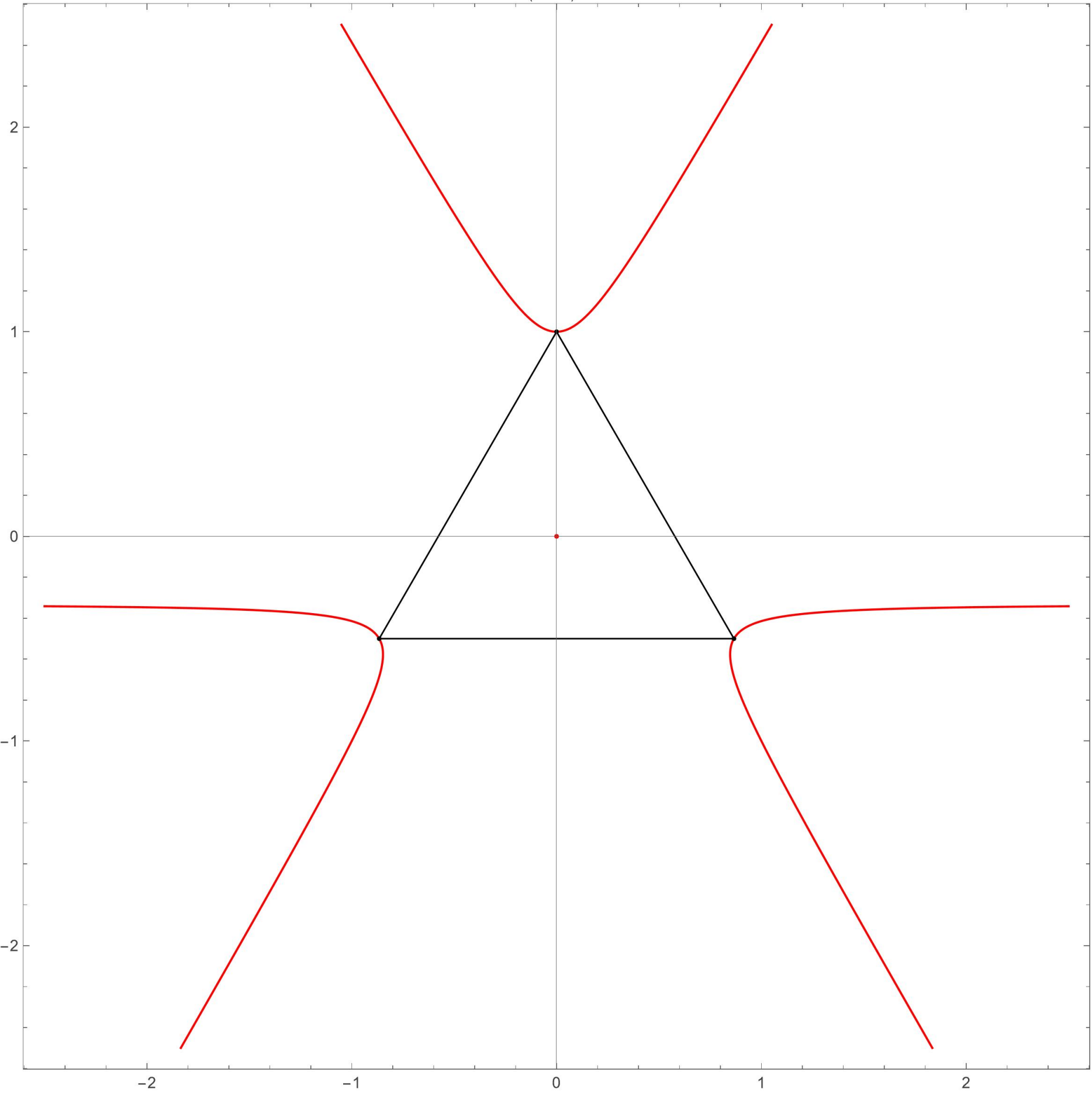
X (764)



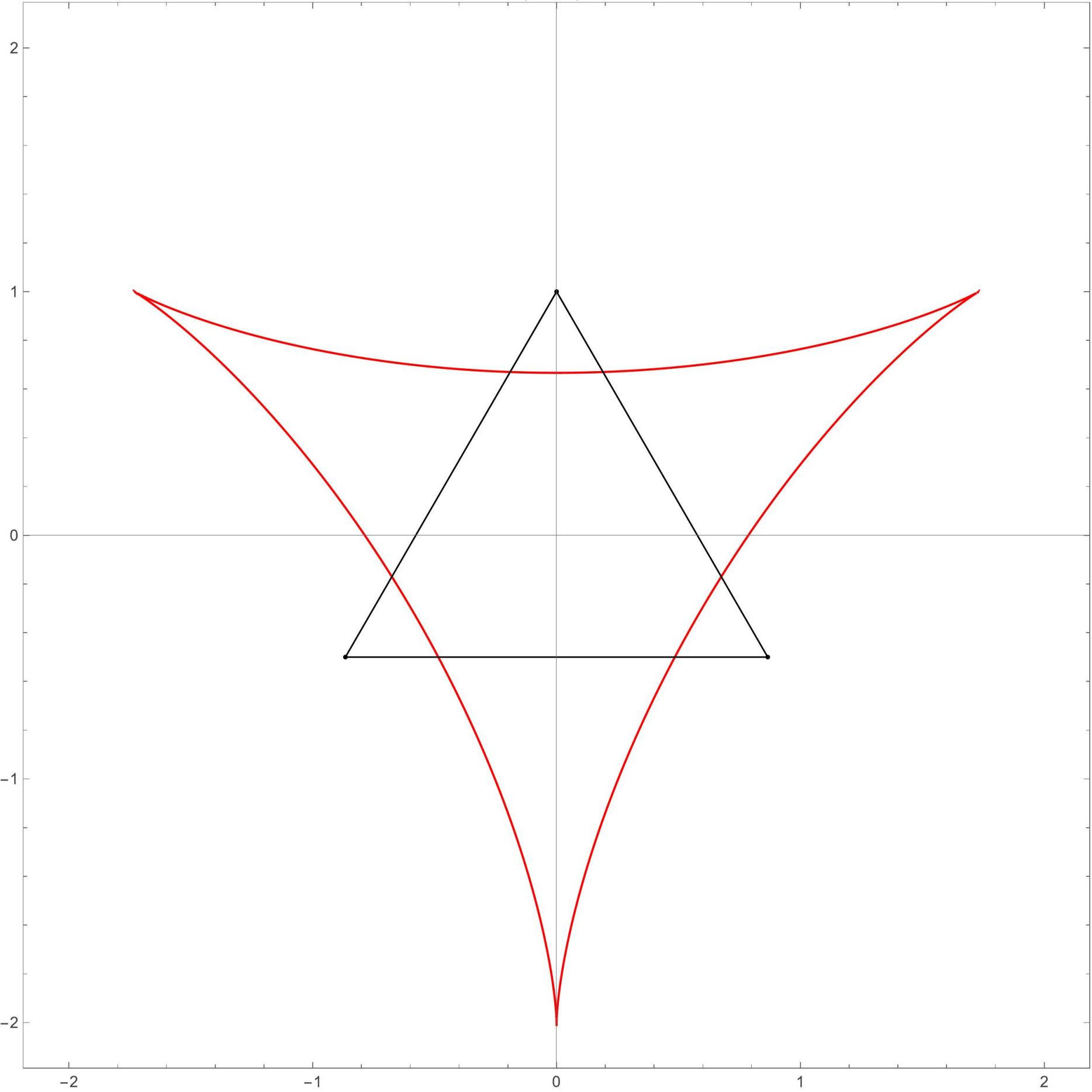
X (865)



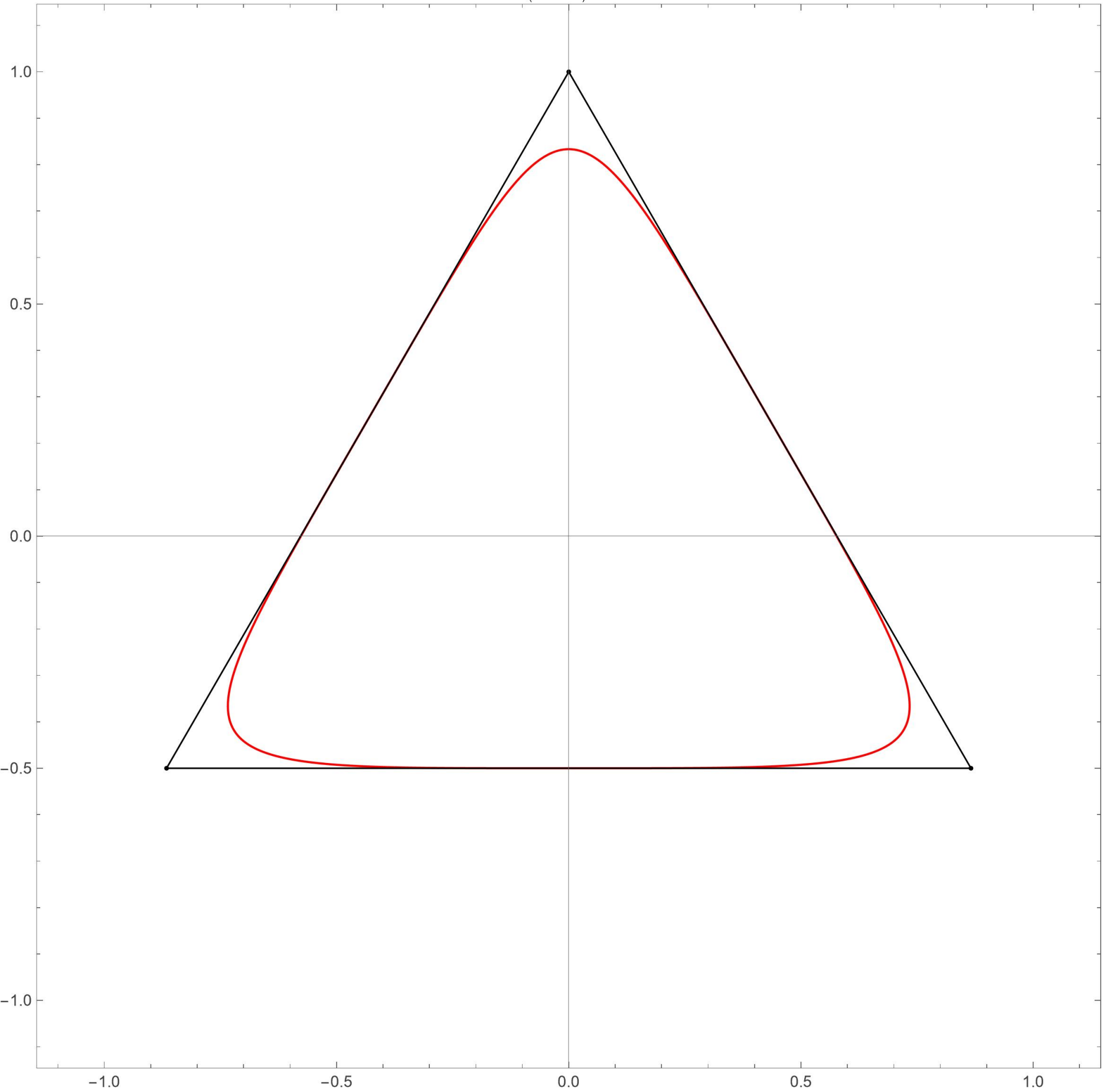
X (874)



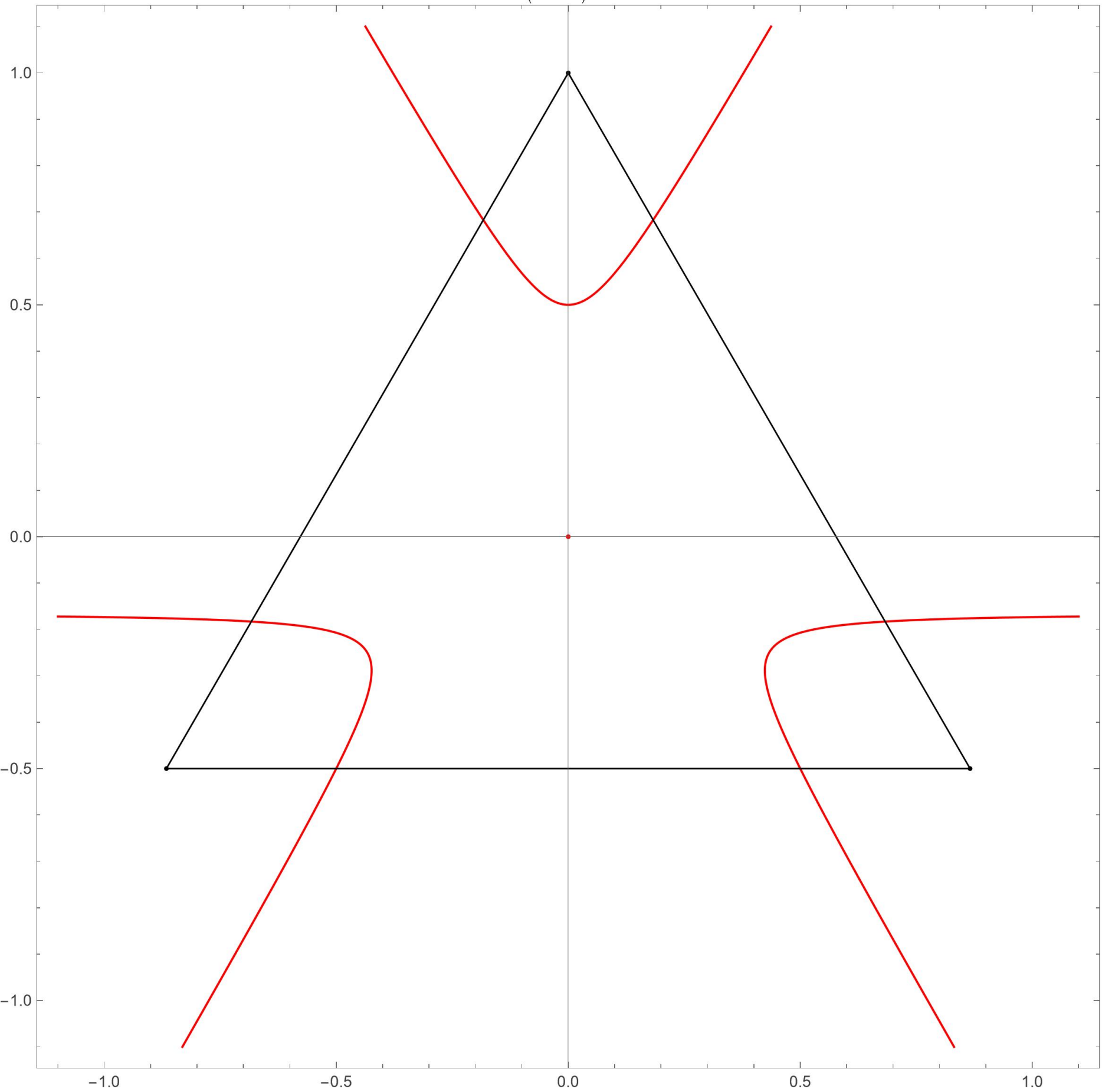
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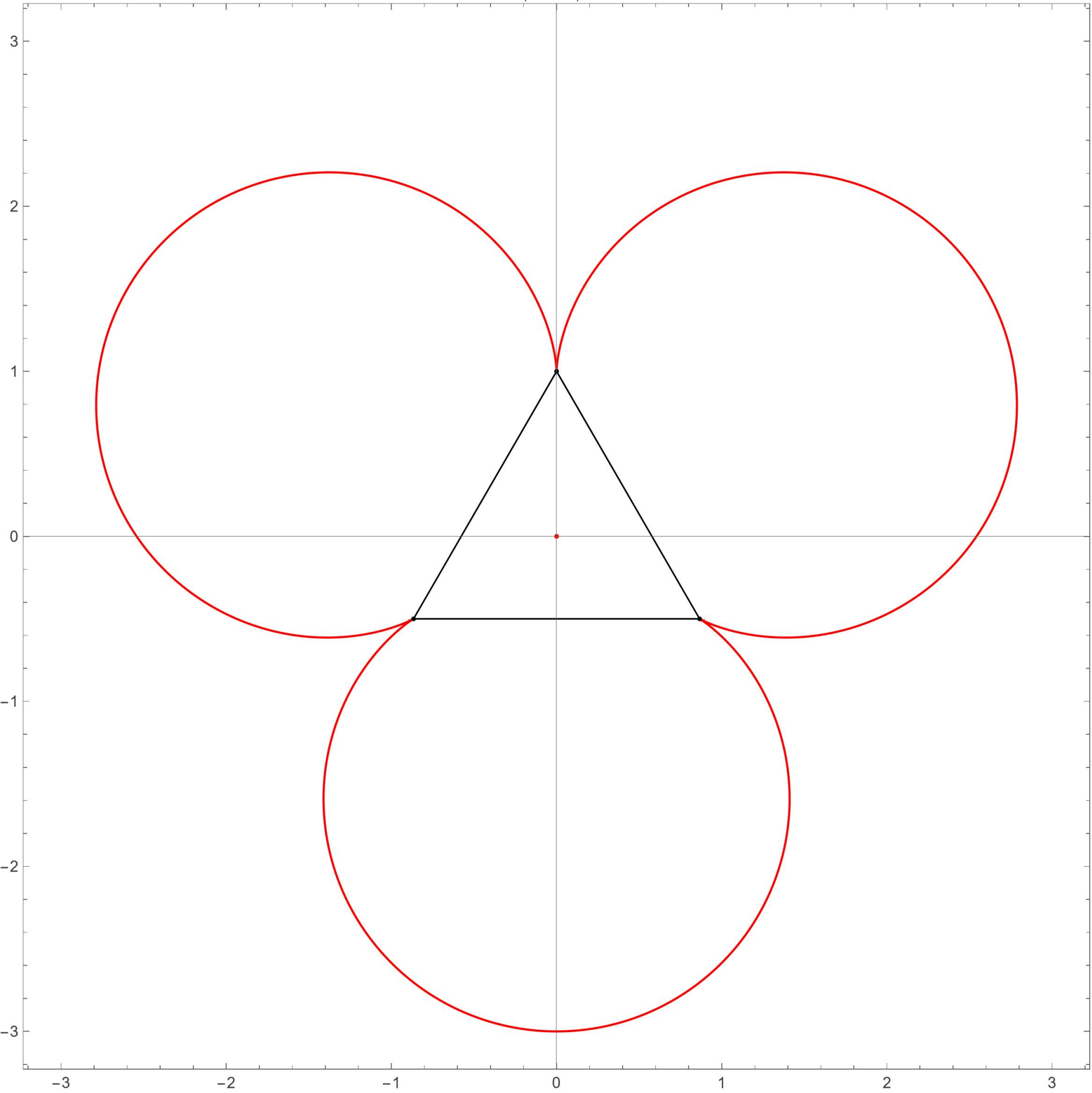
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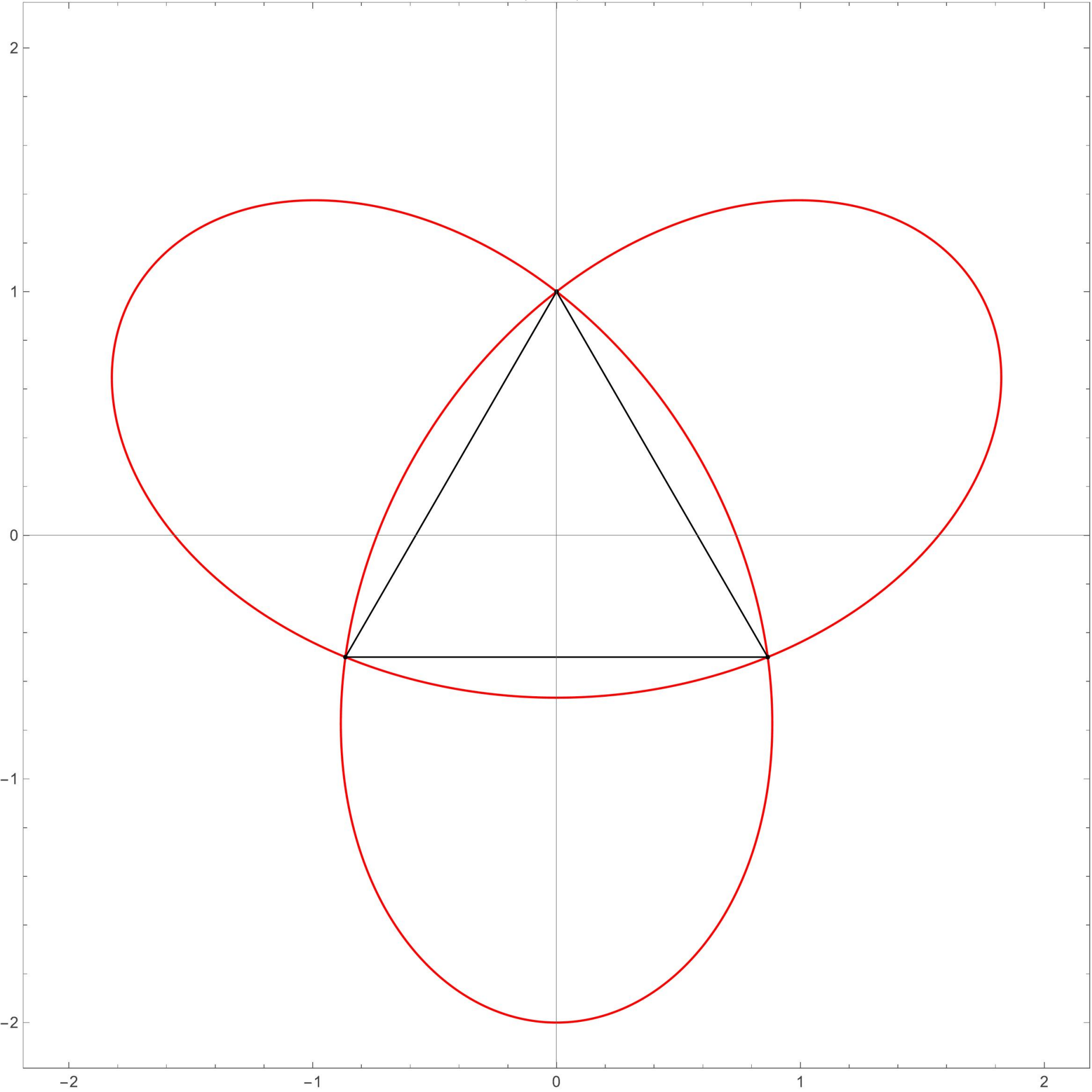
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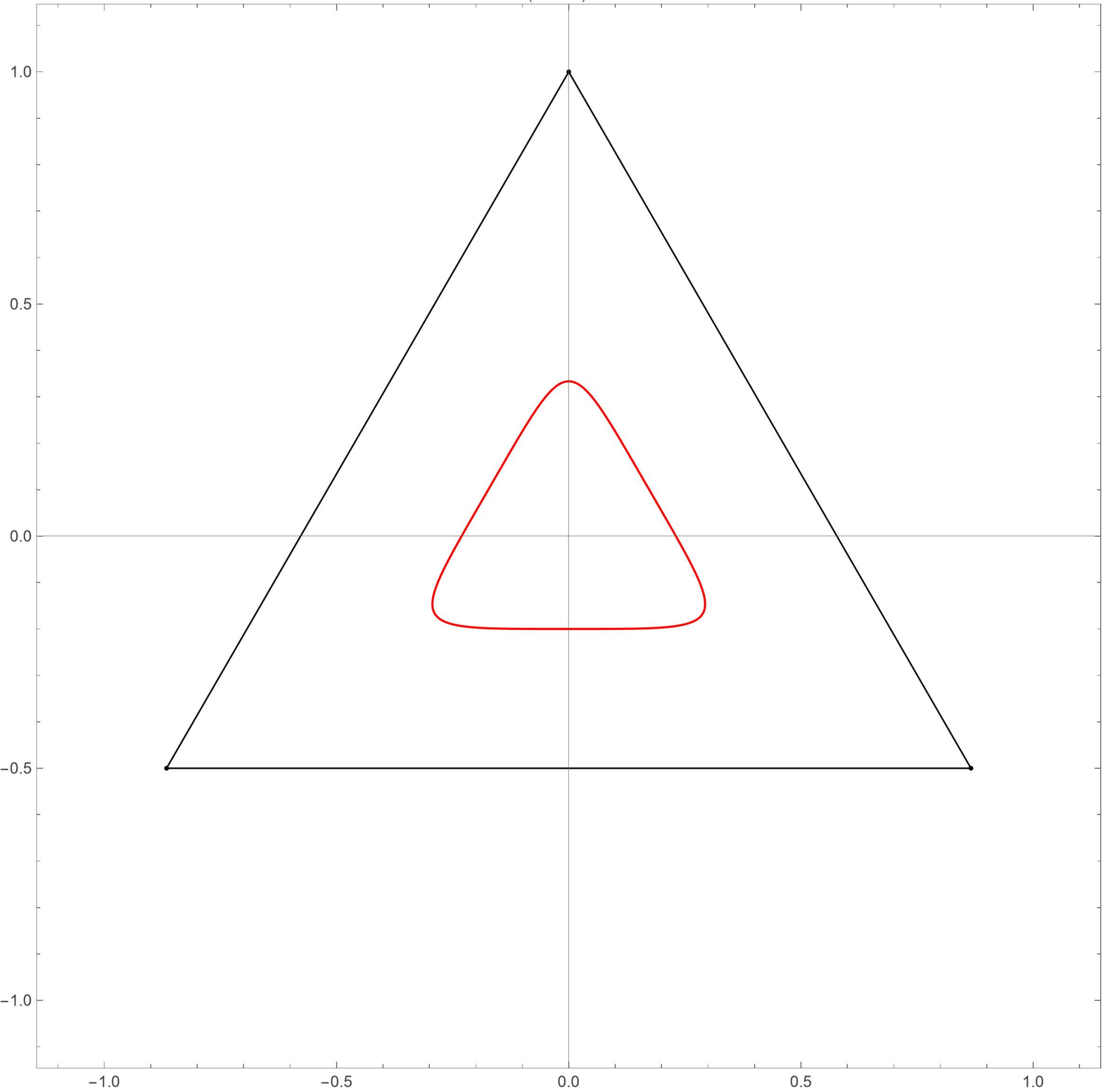
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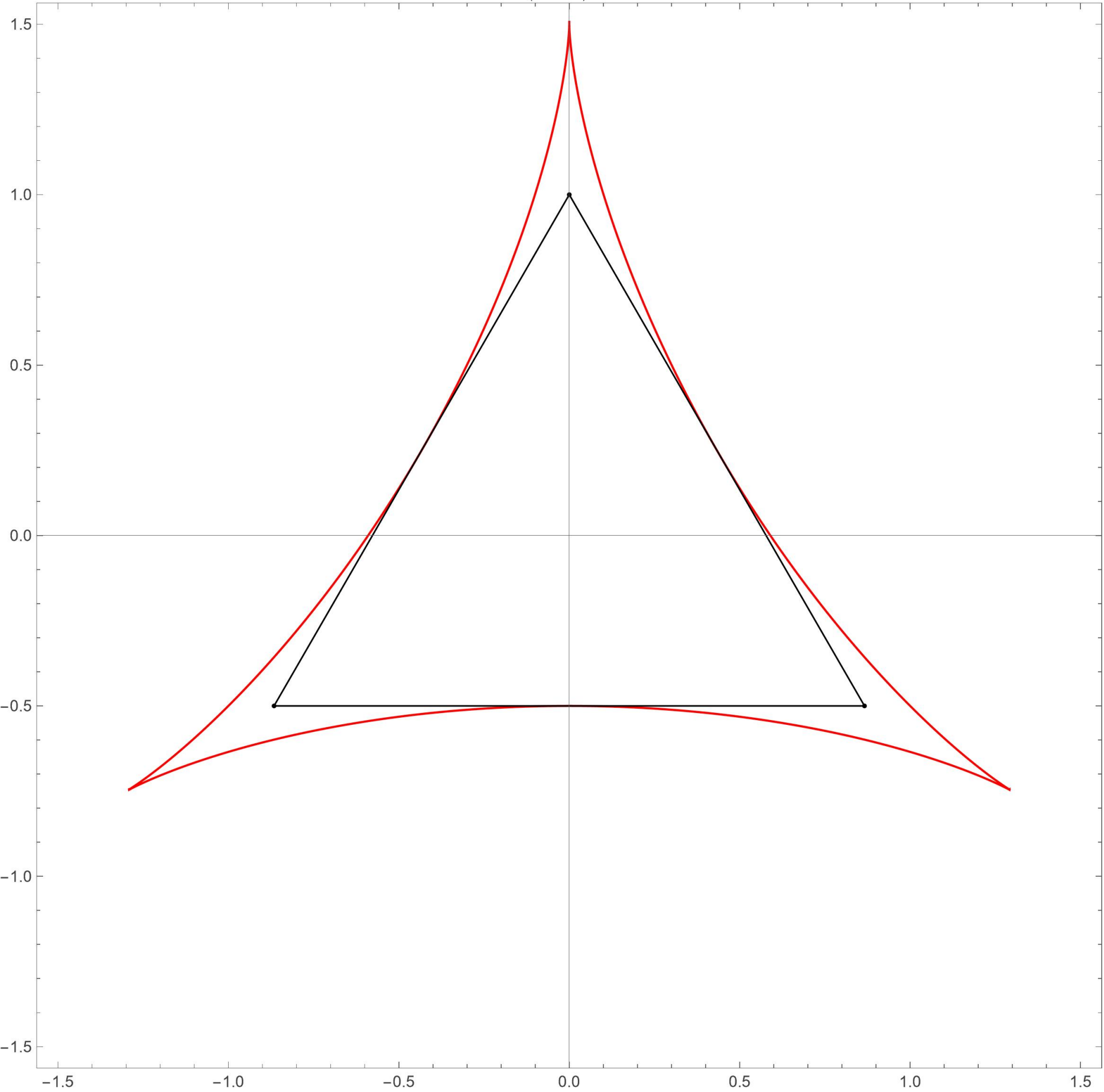
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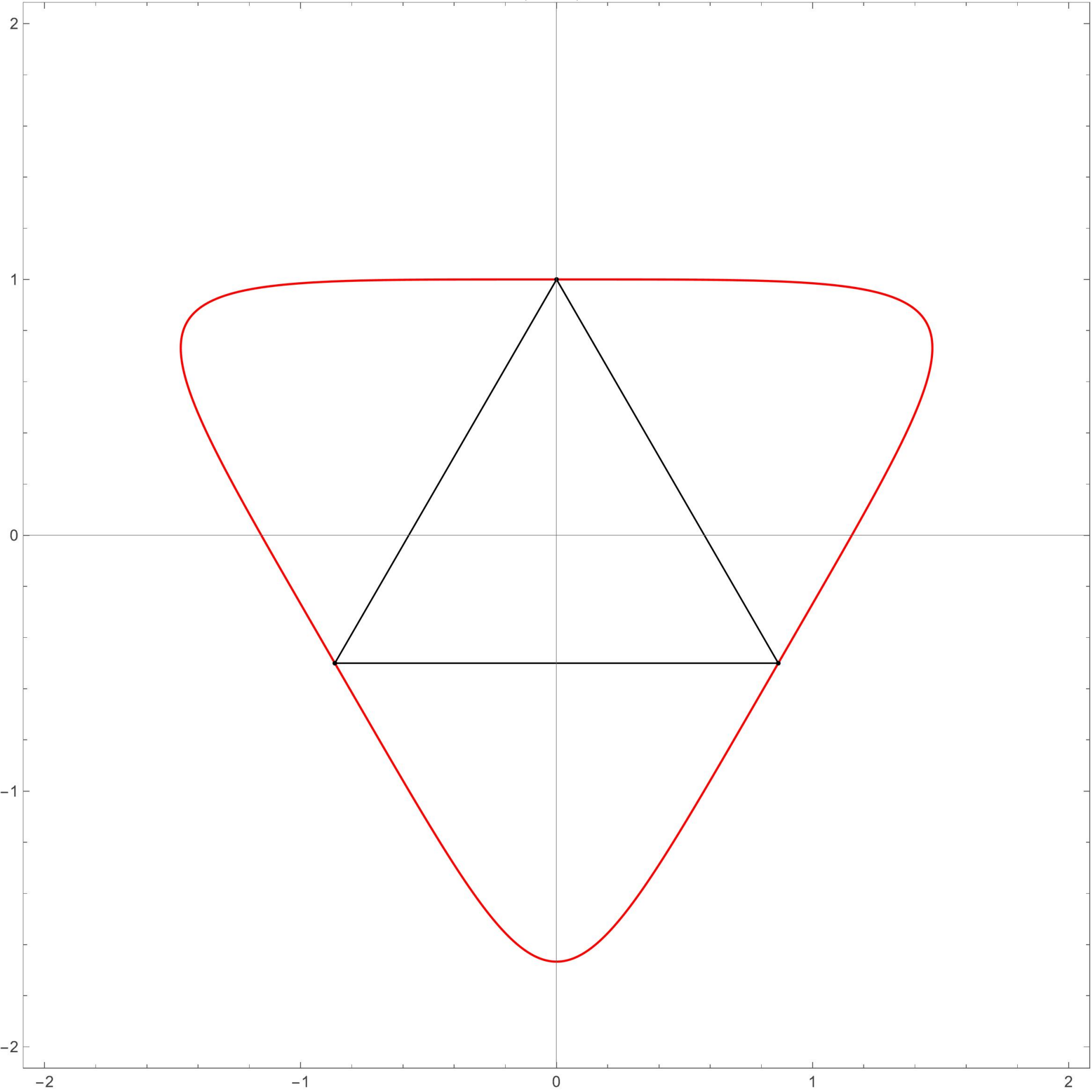
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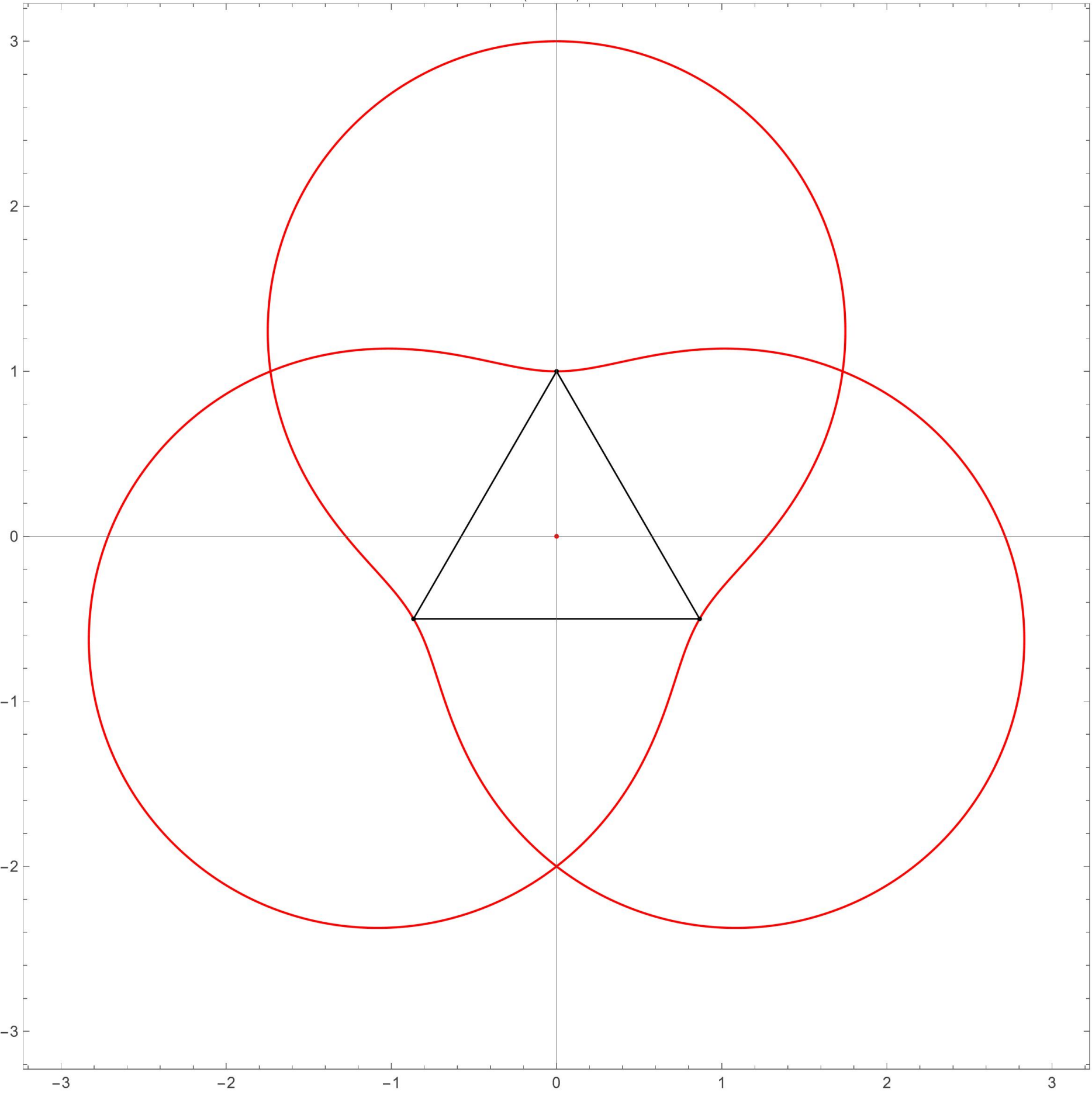
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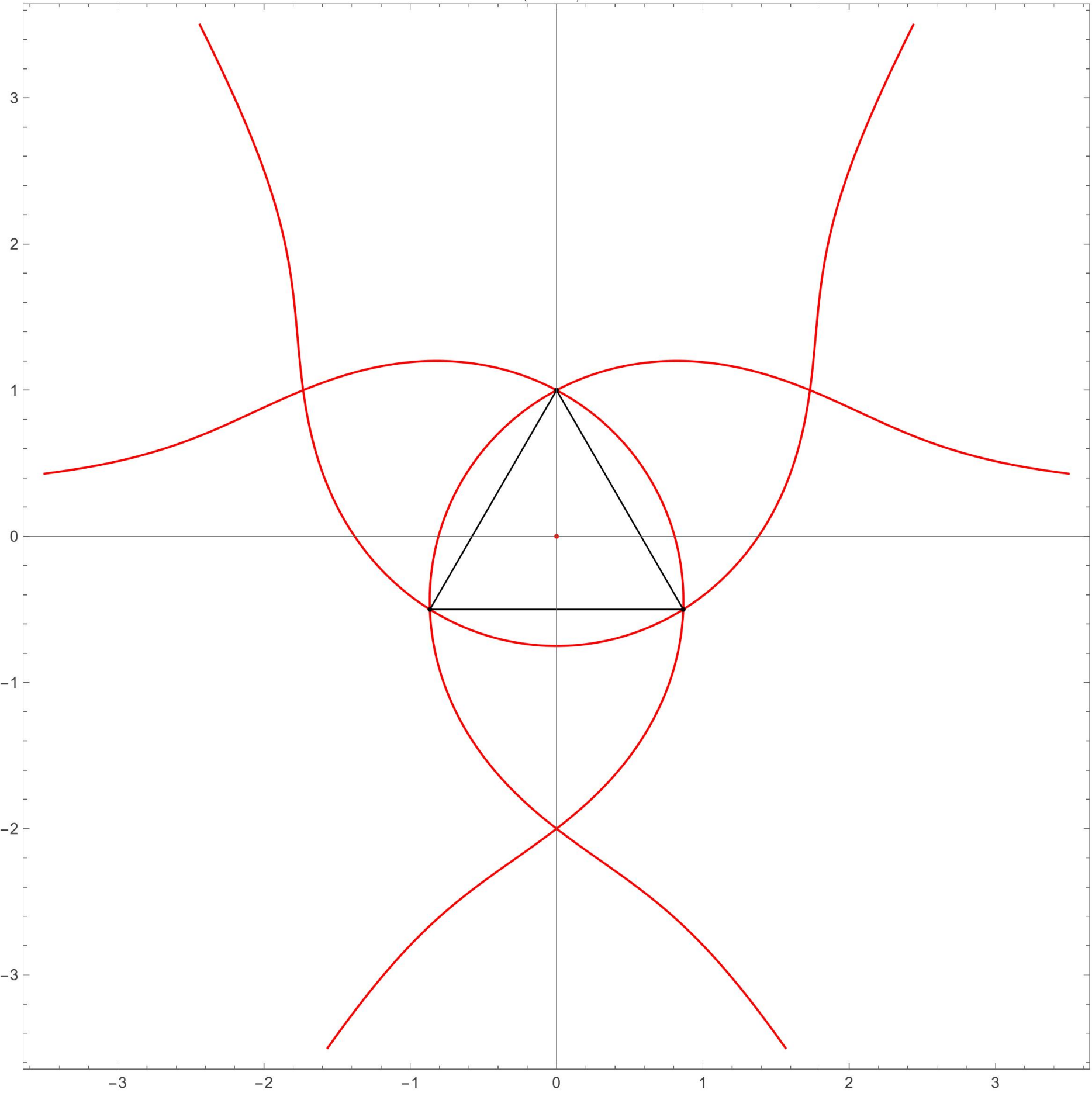
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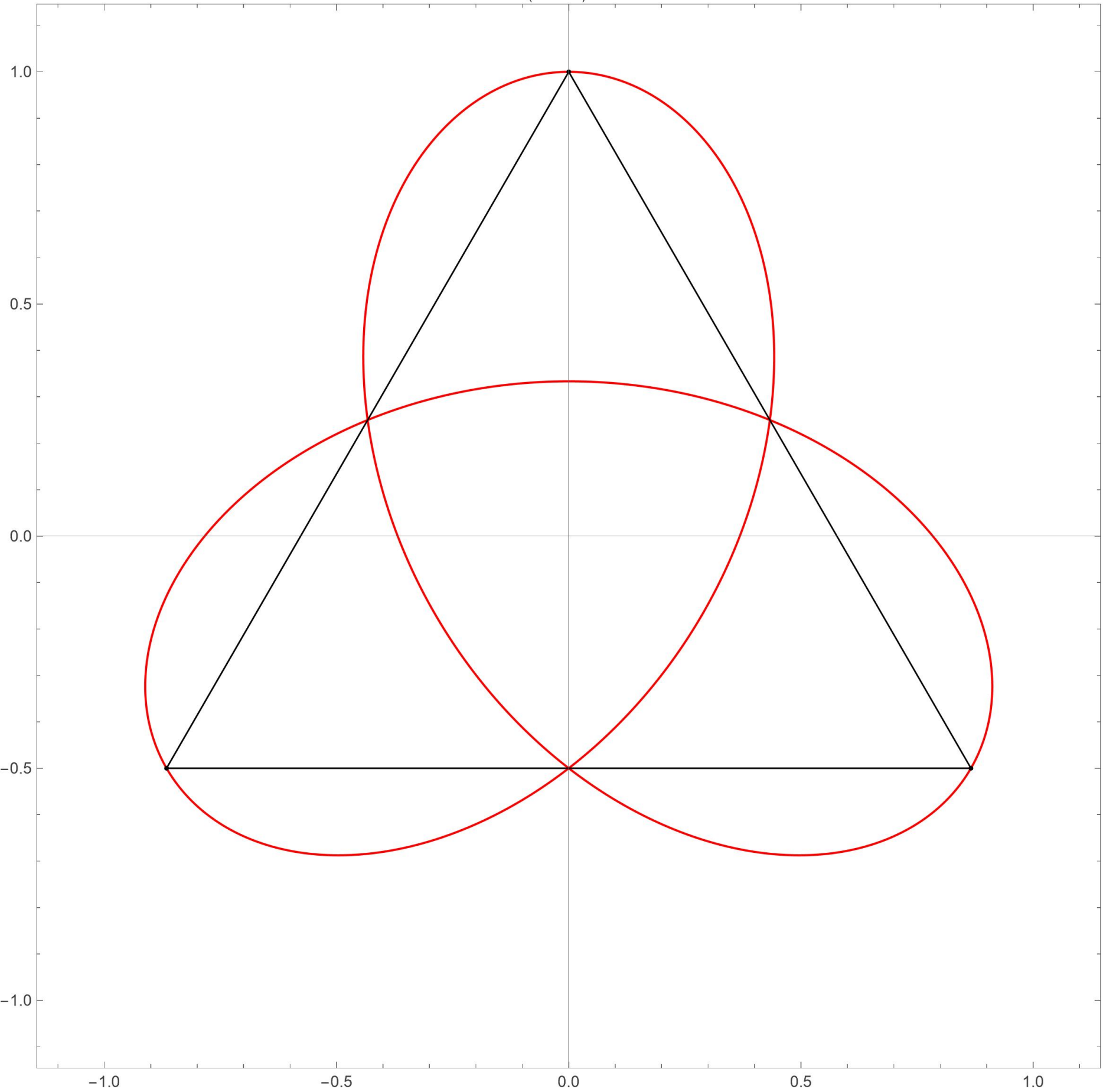
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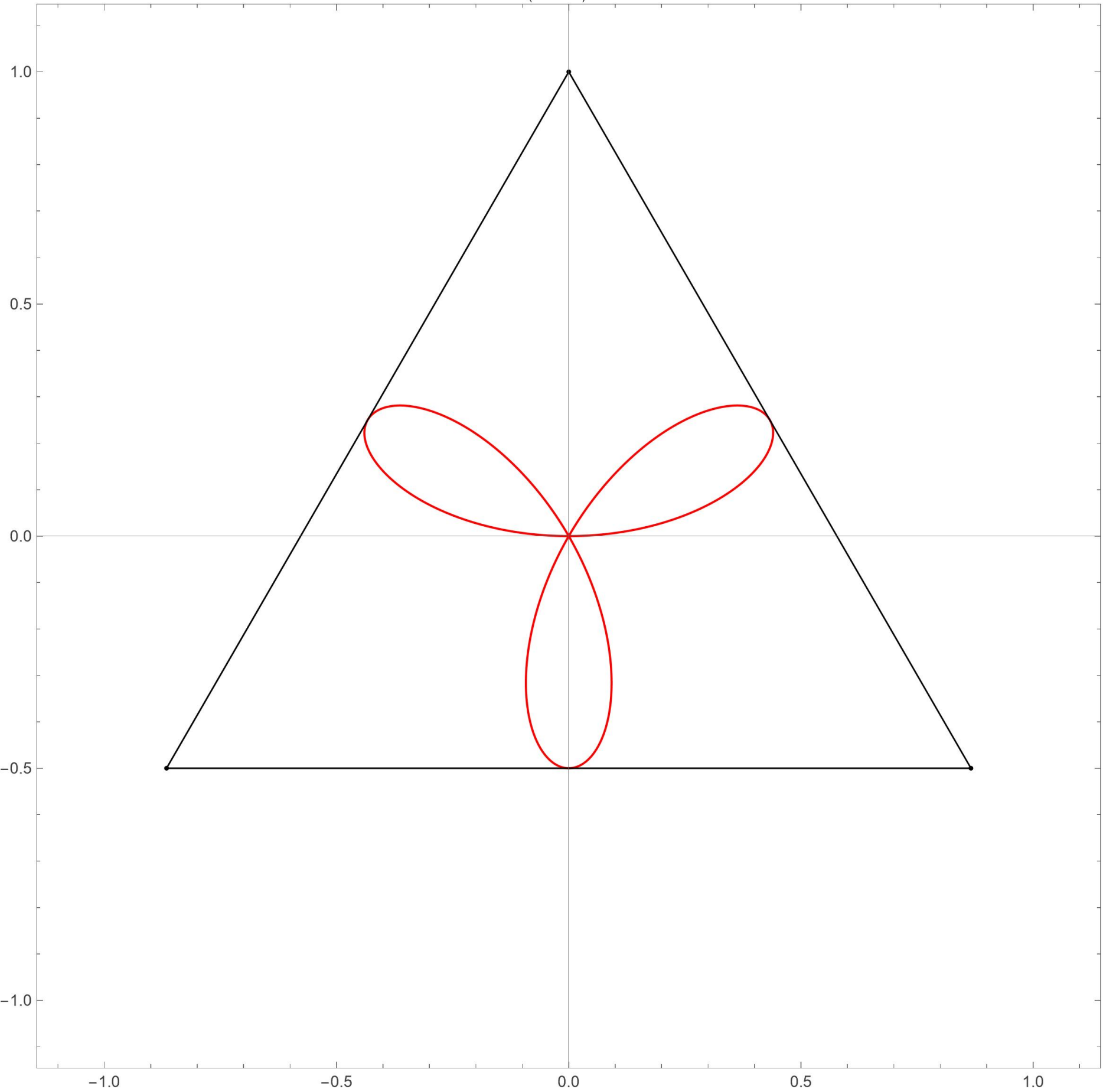
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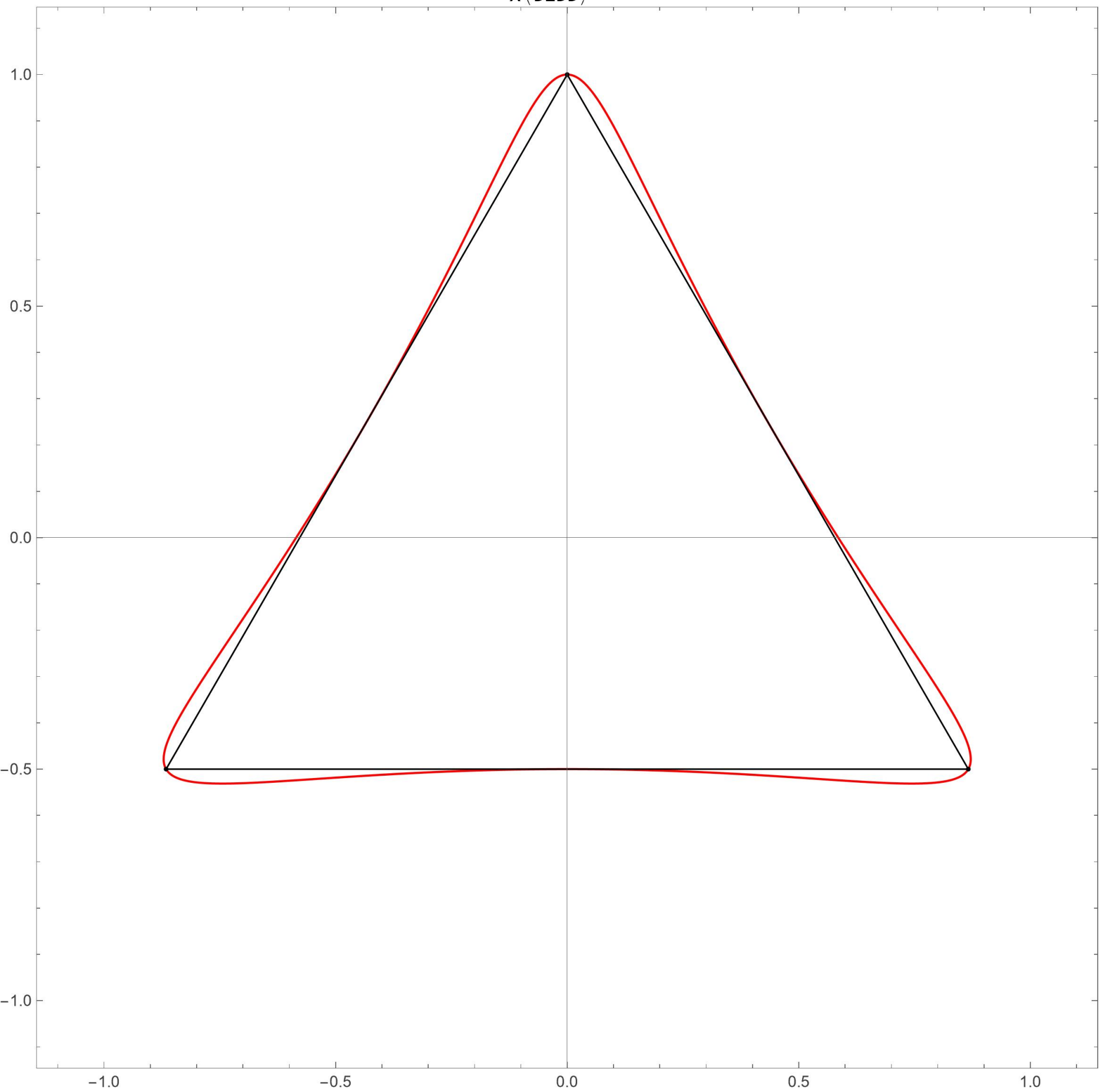
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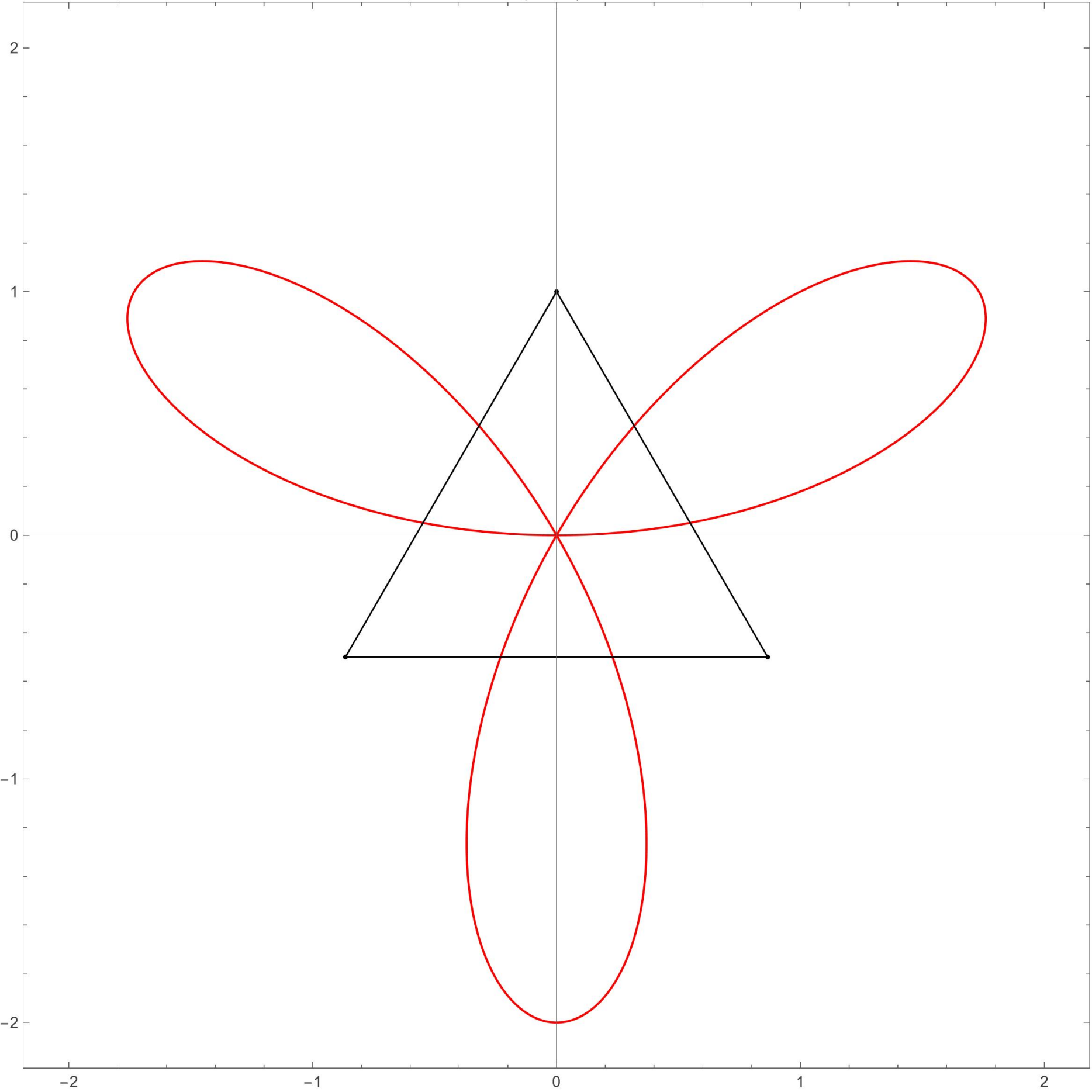
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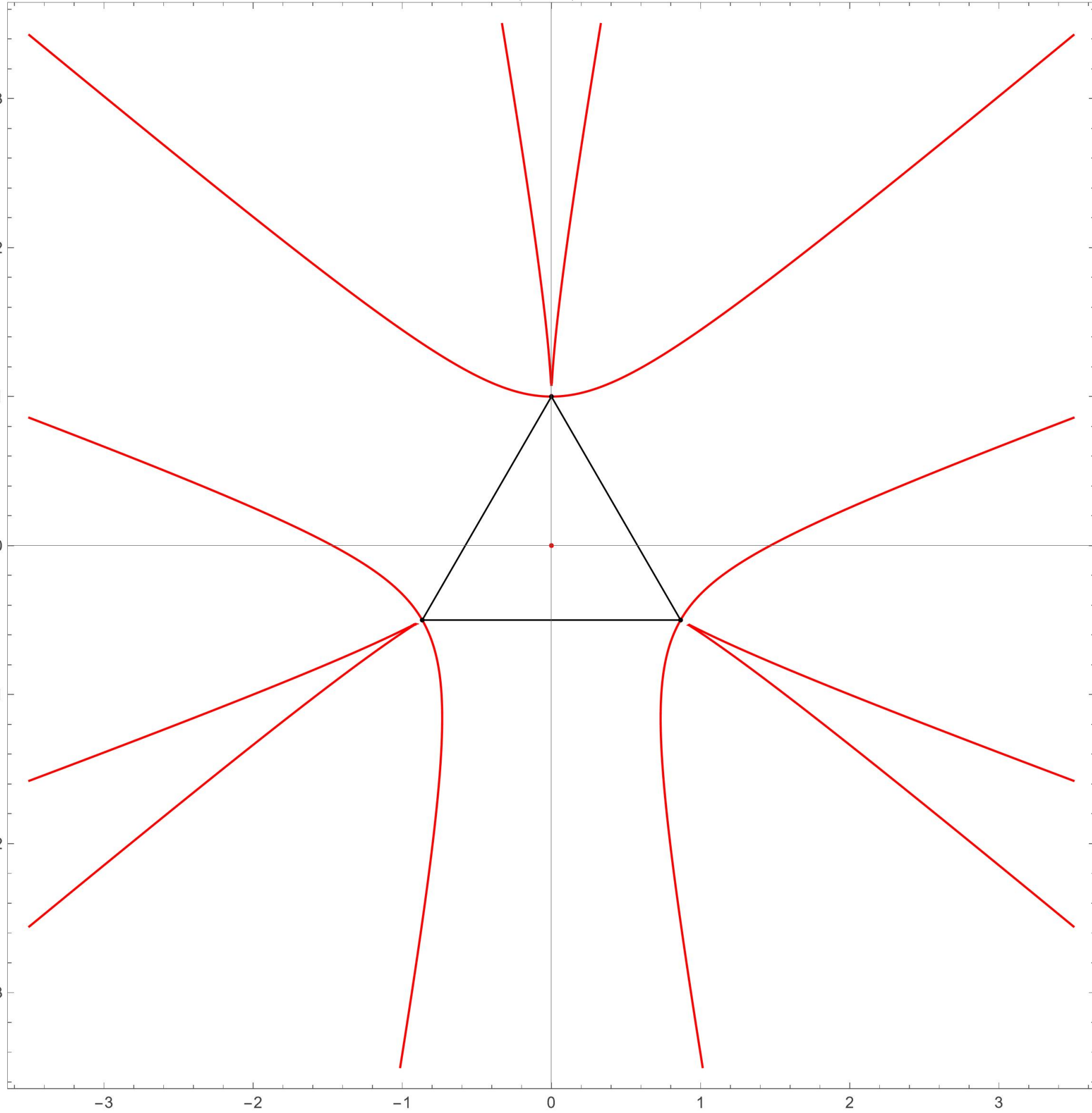
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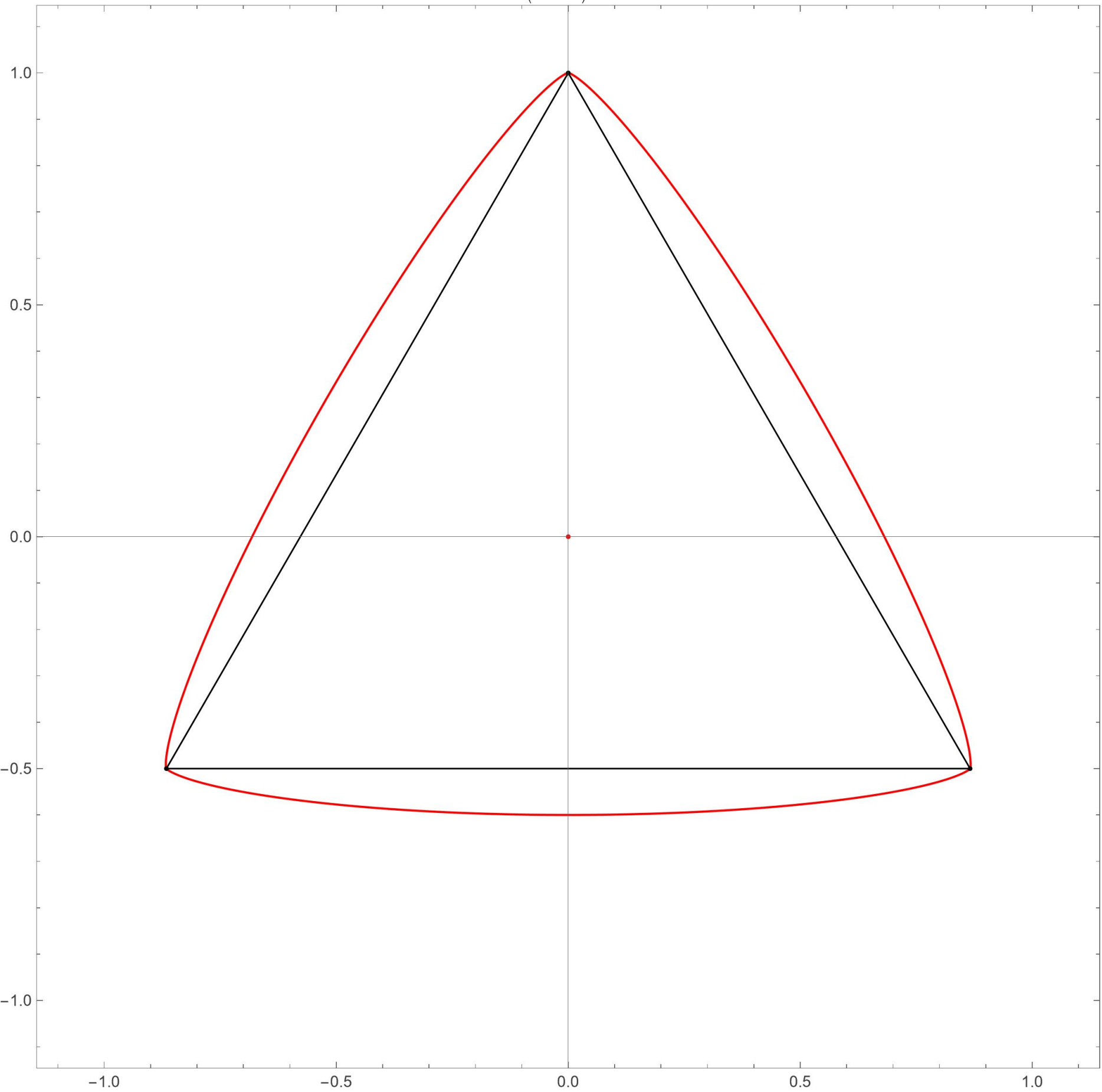
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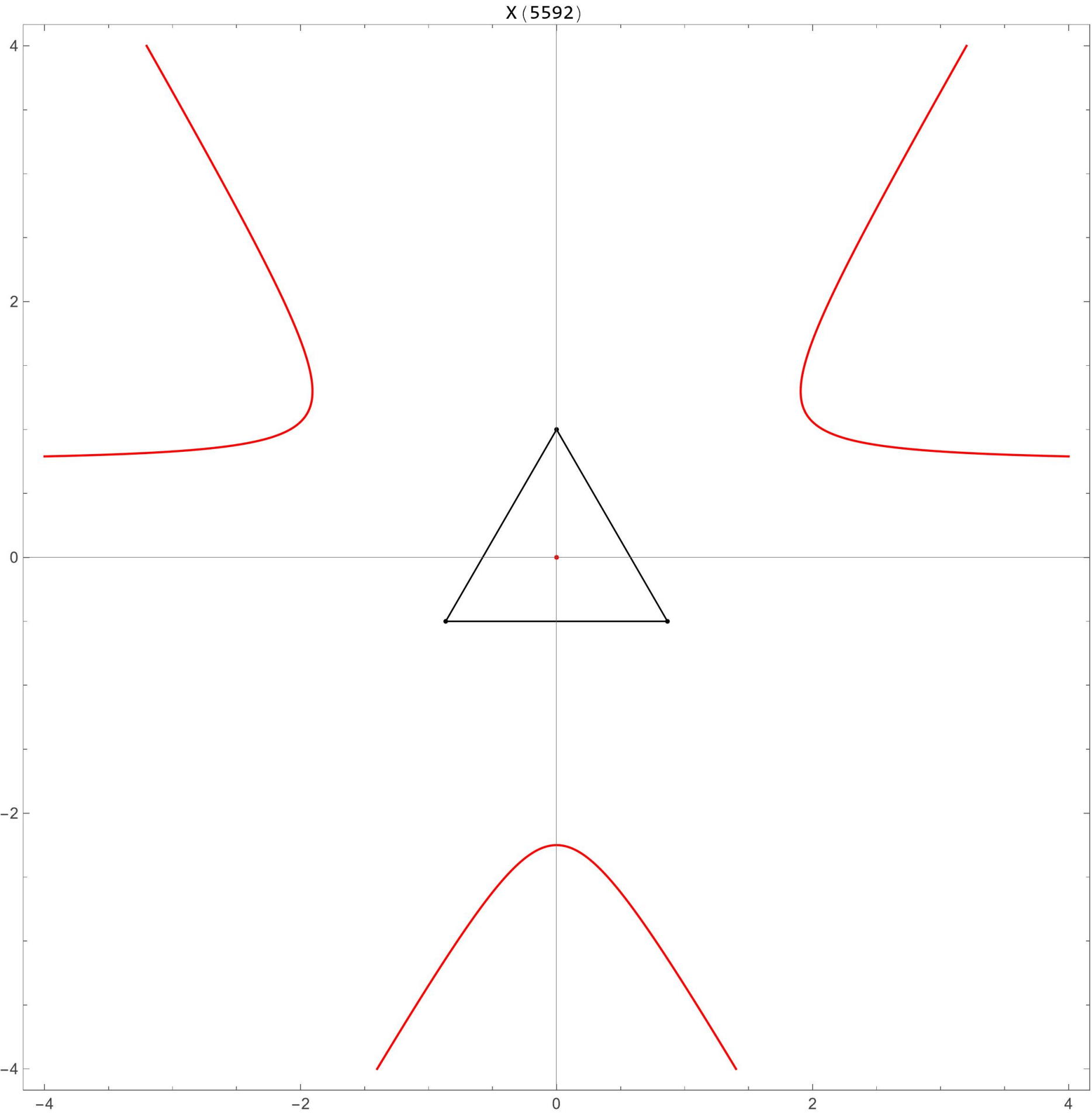
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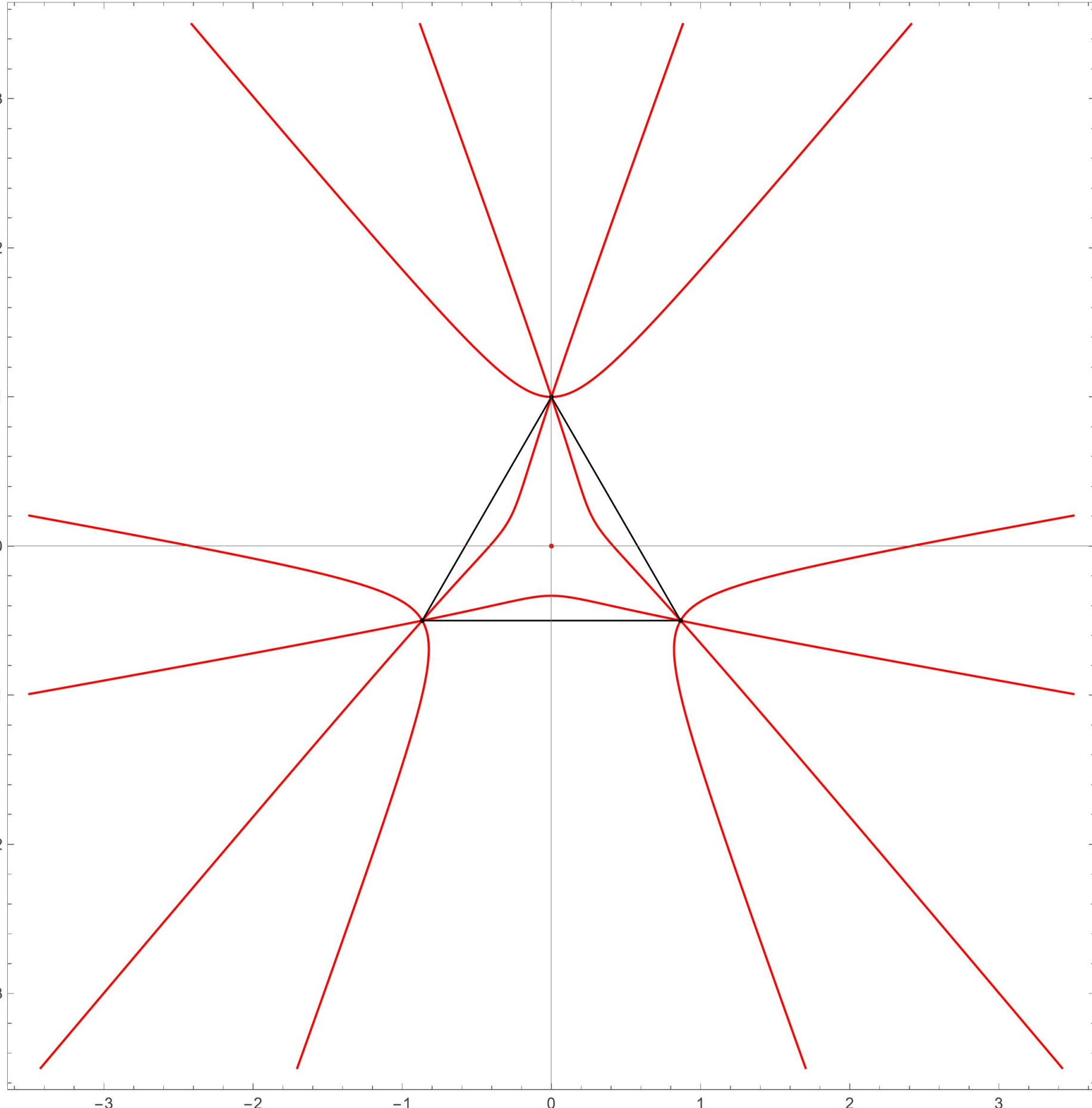
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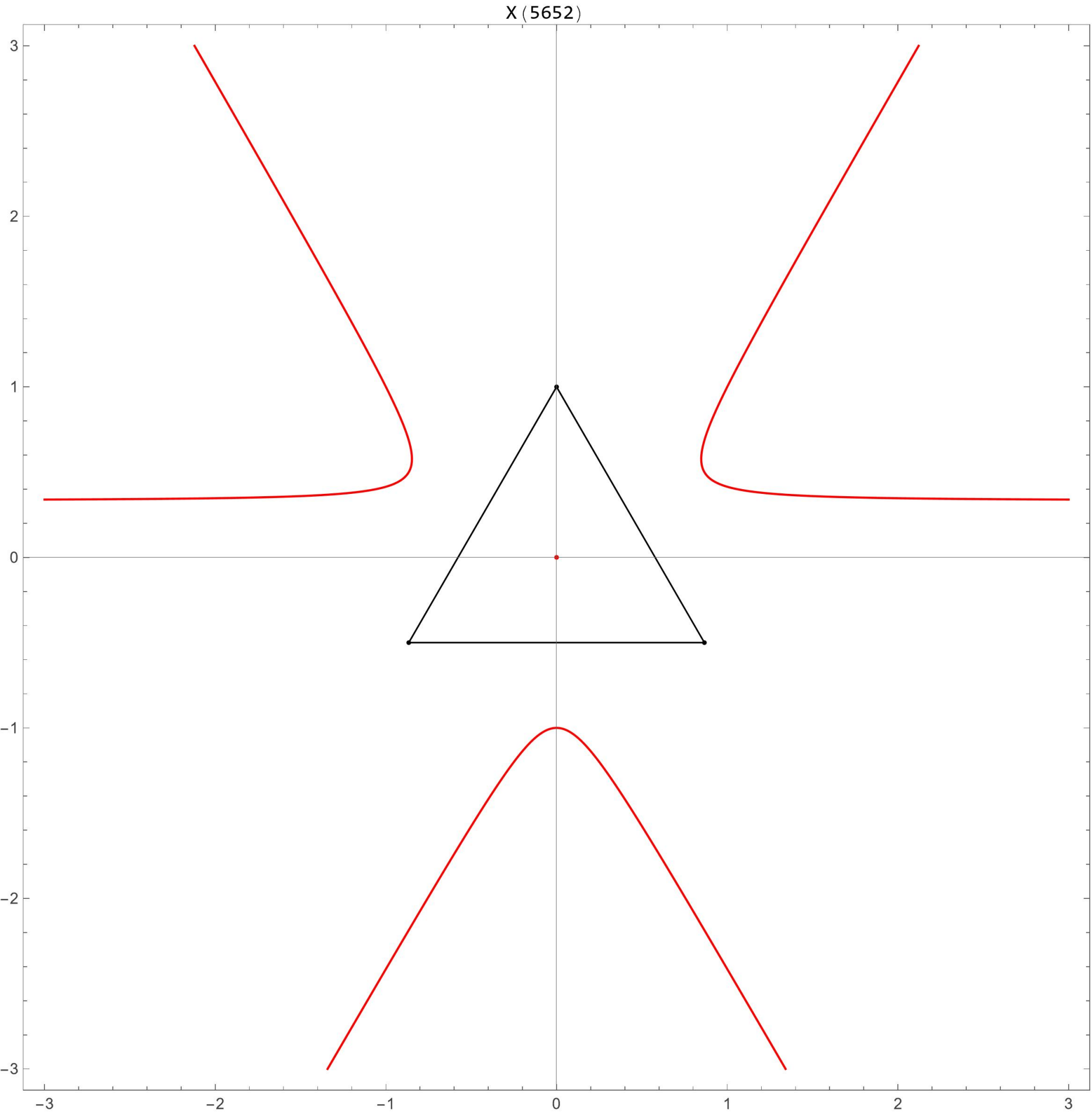
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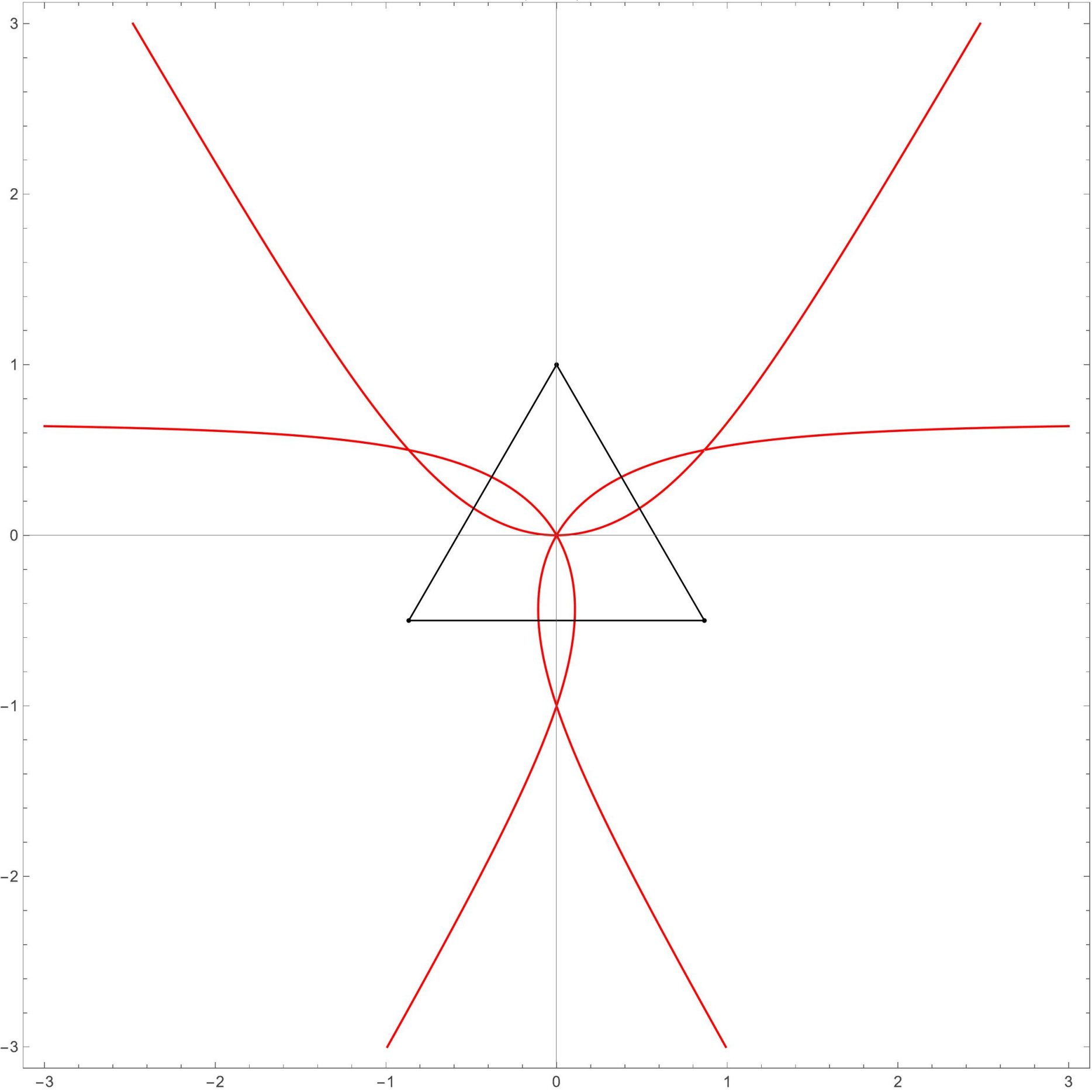
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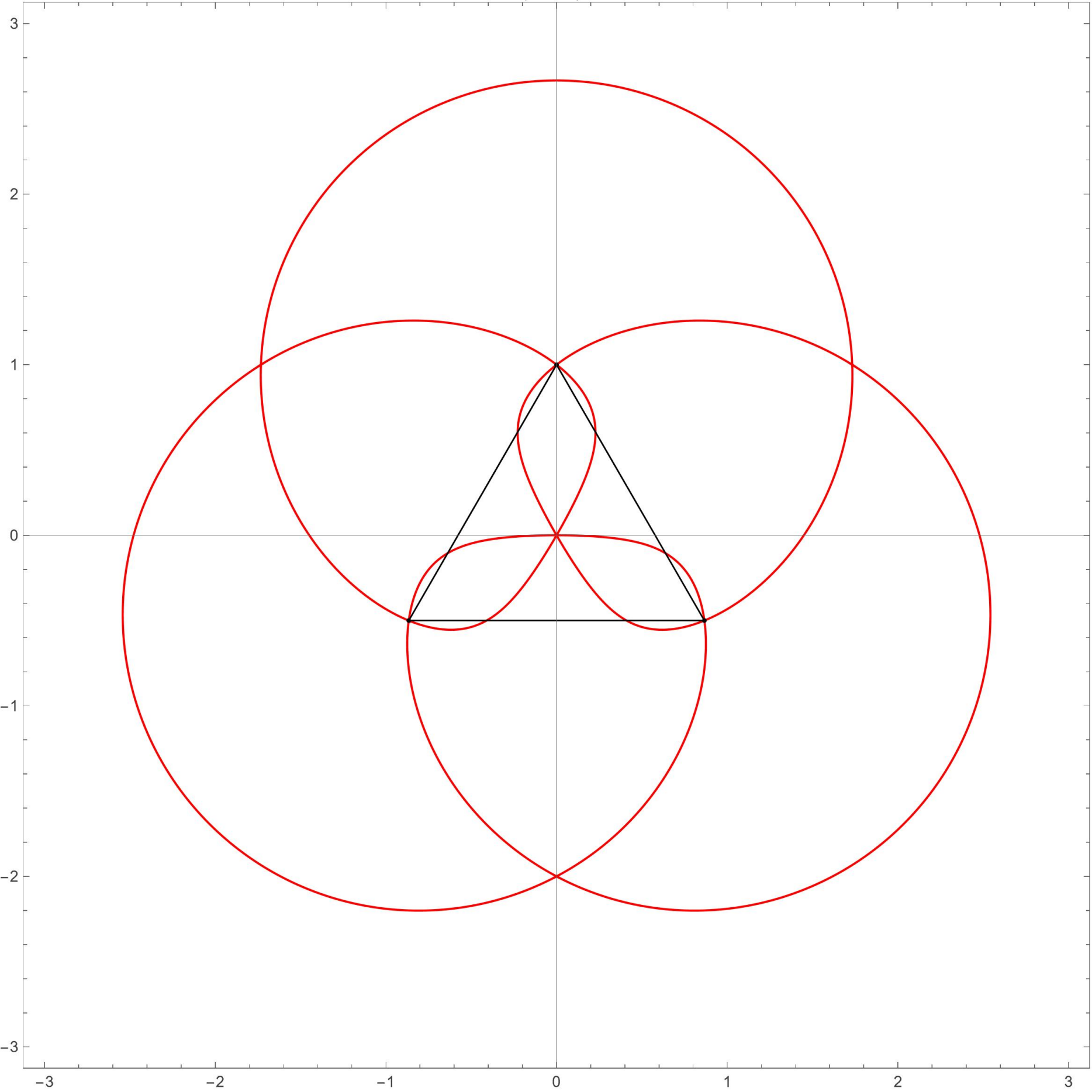
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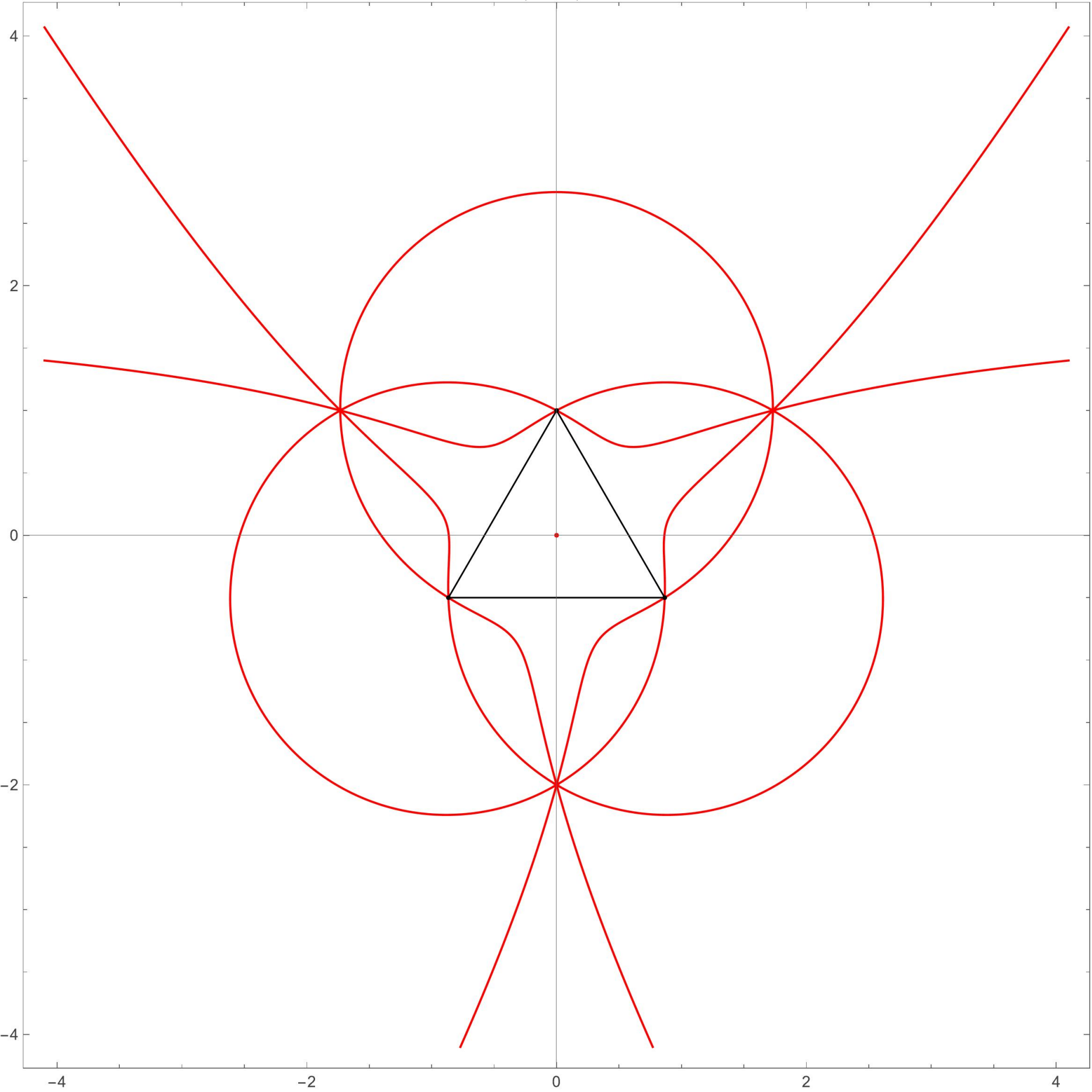
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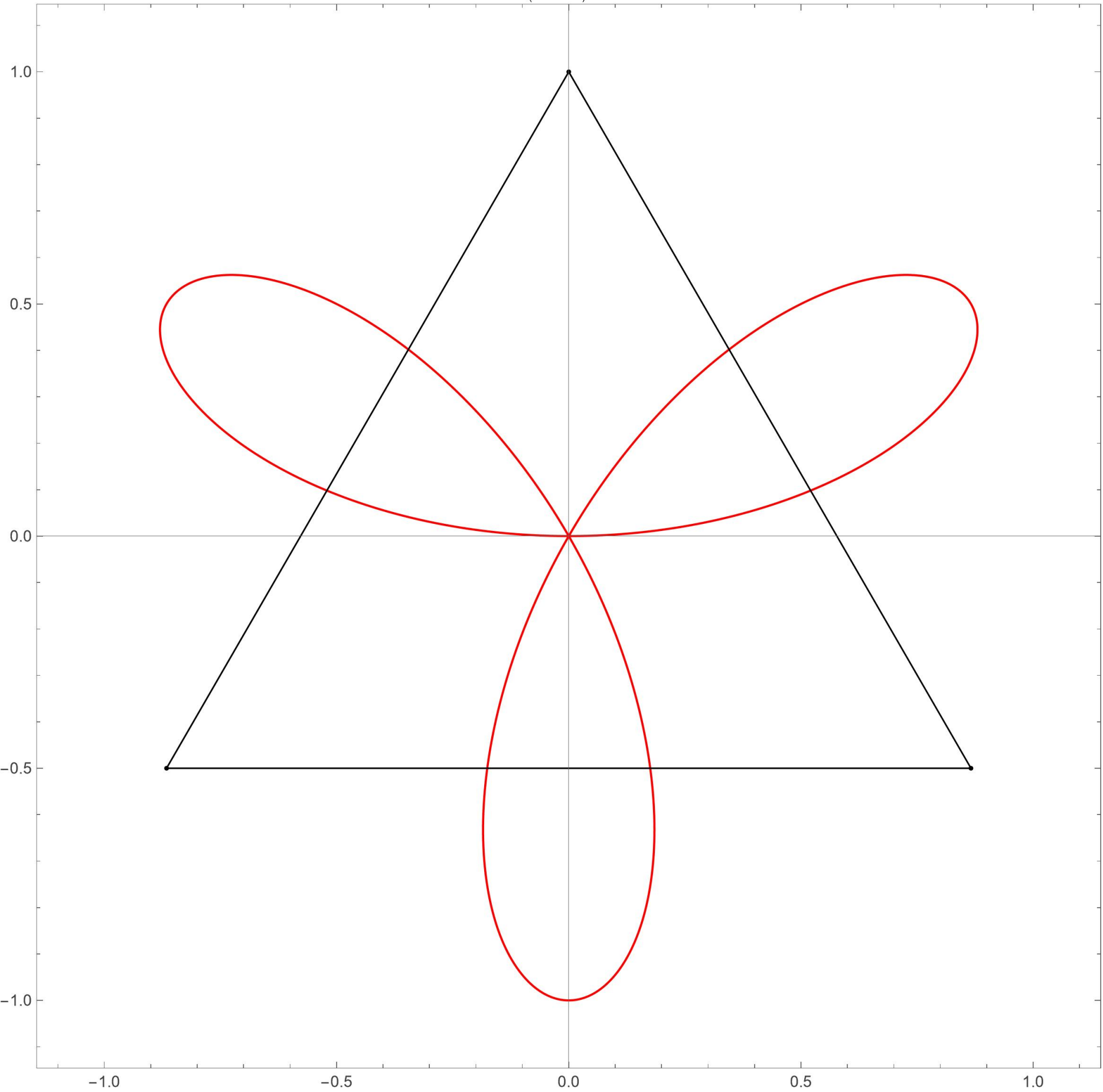
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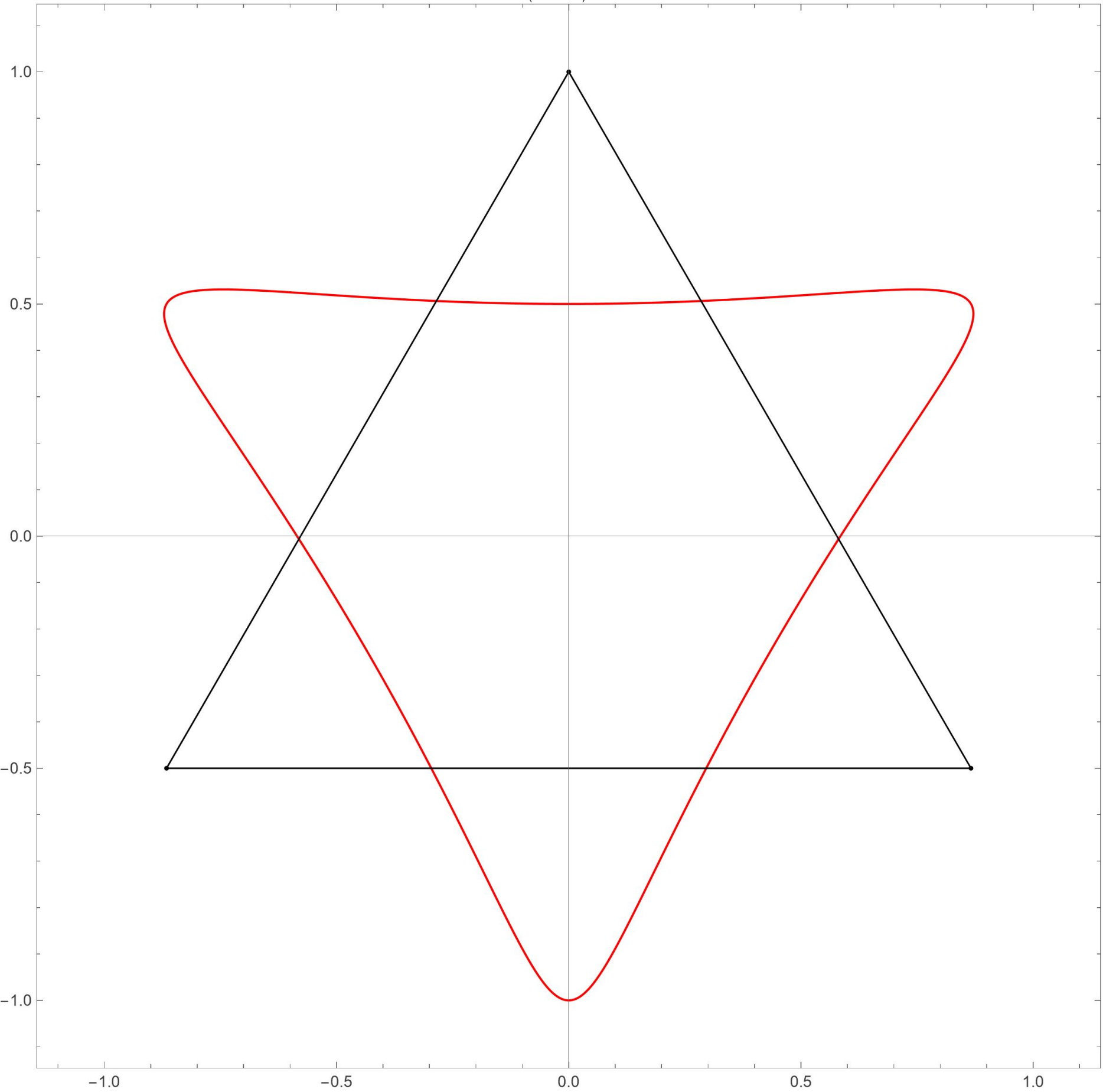
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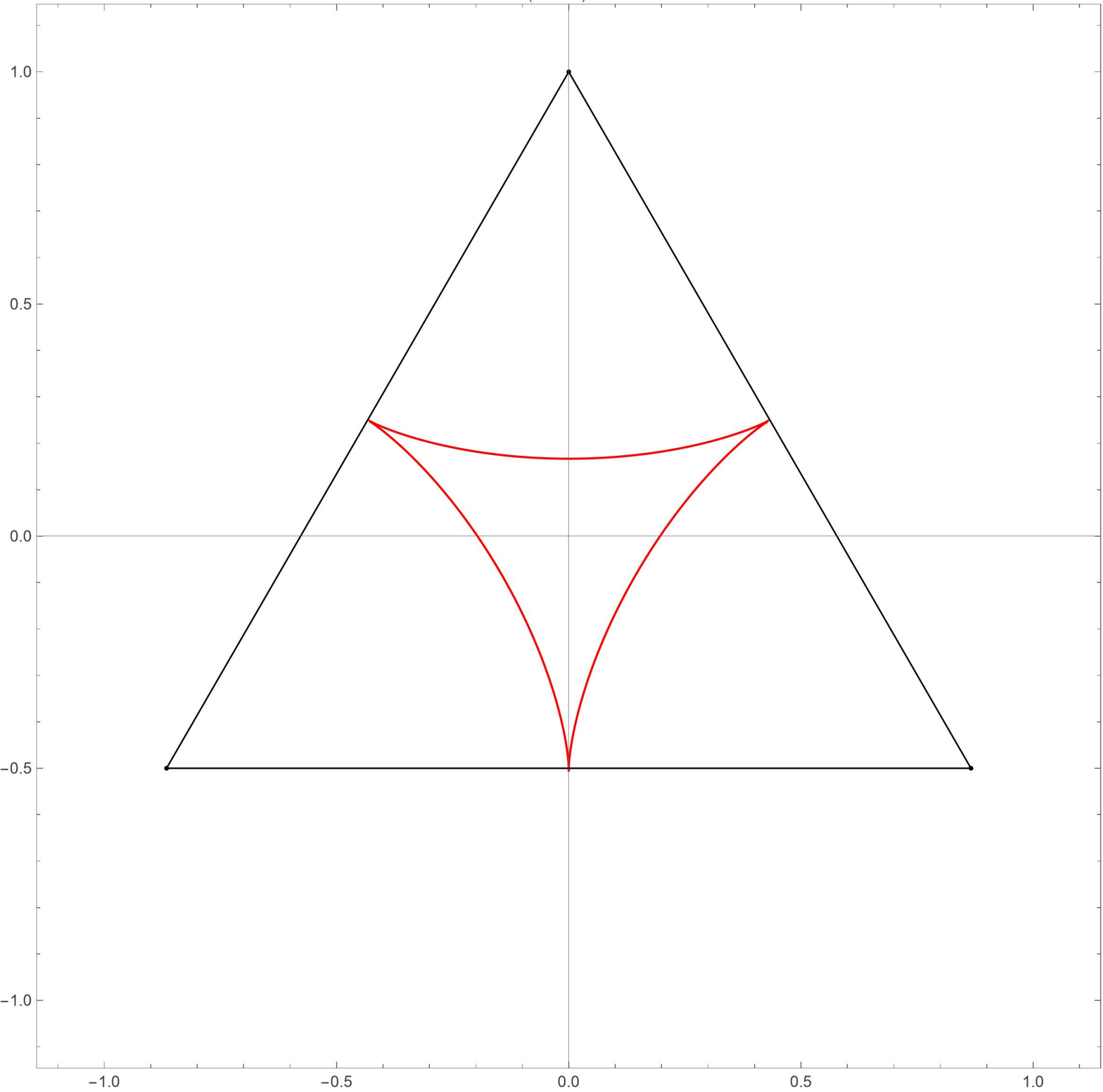
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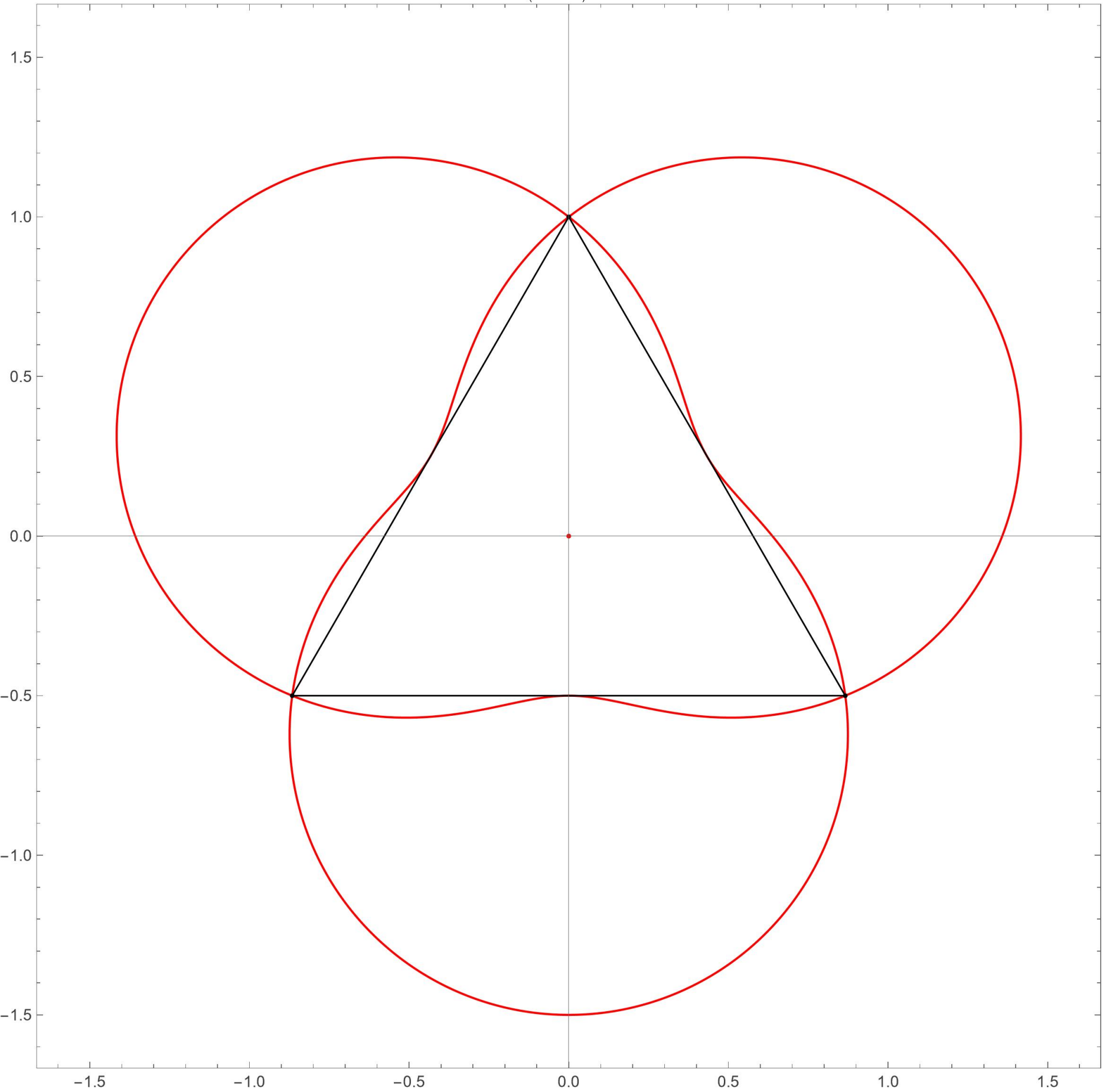
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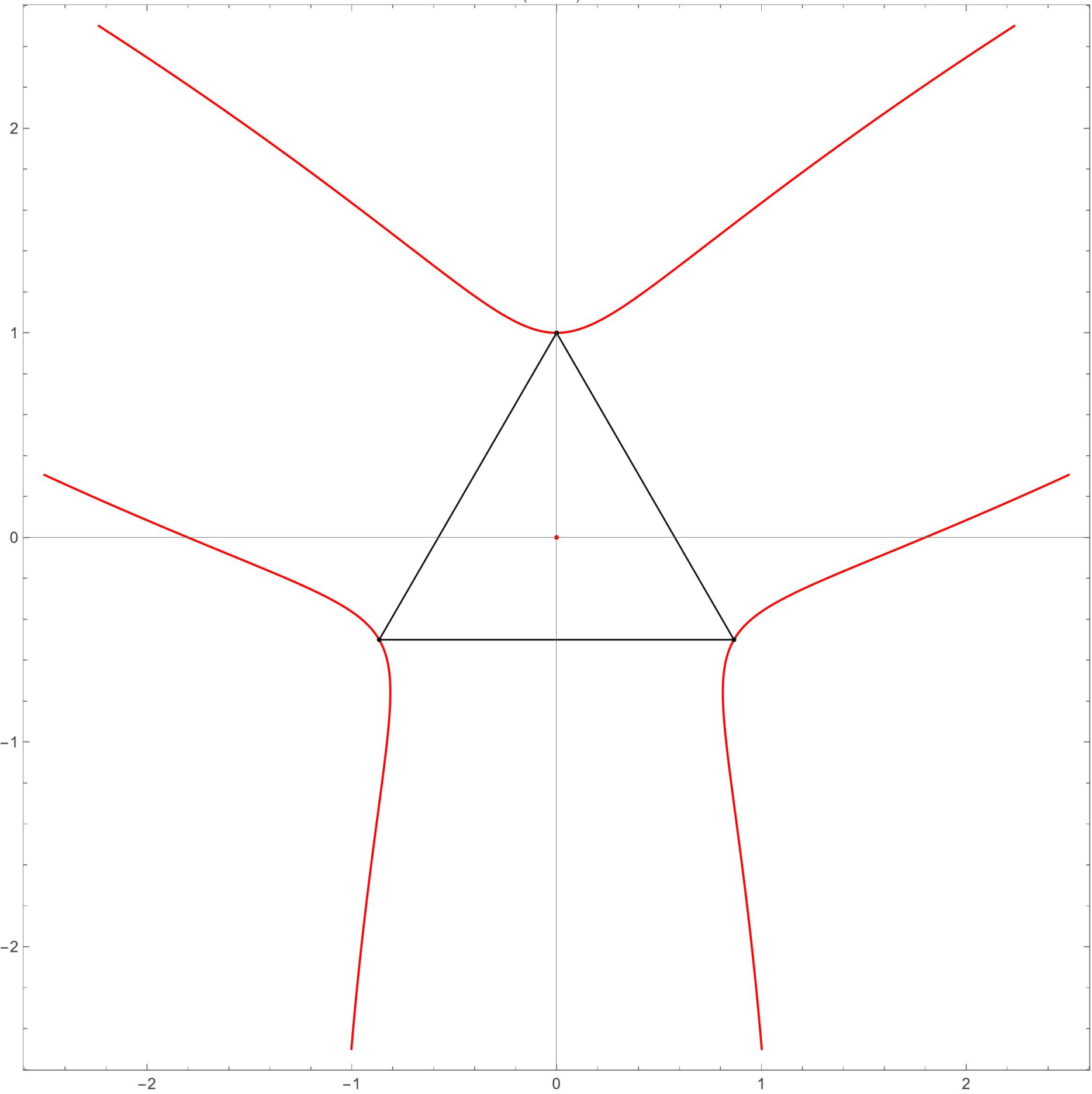
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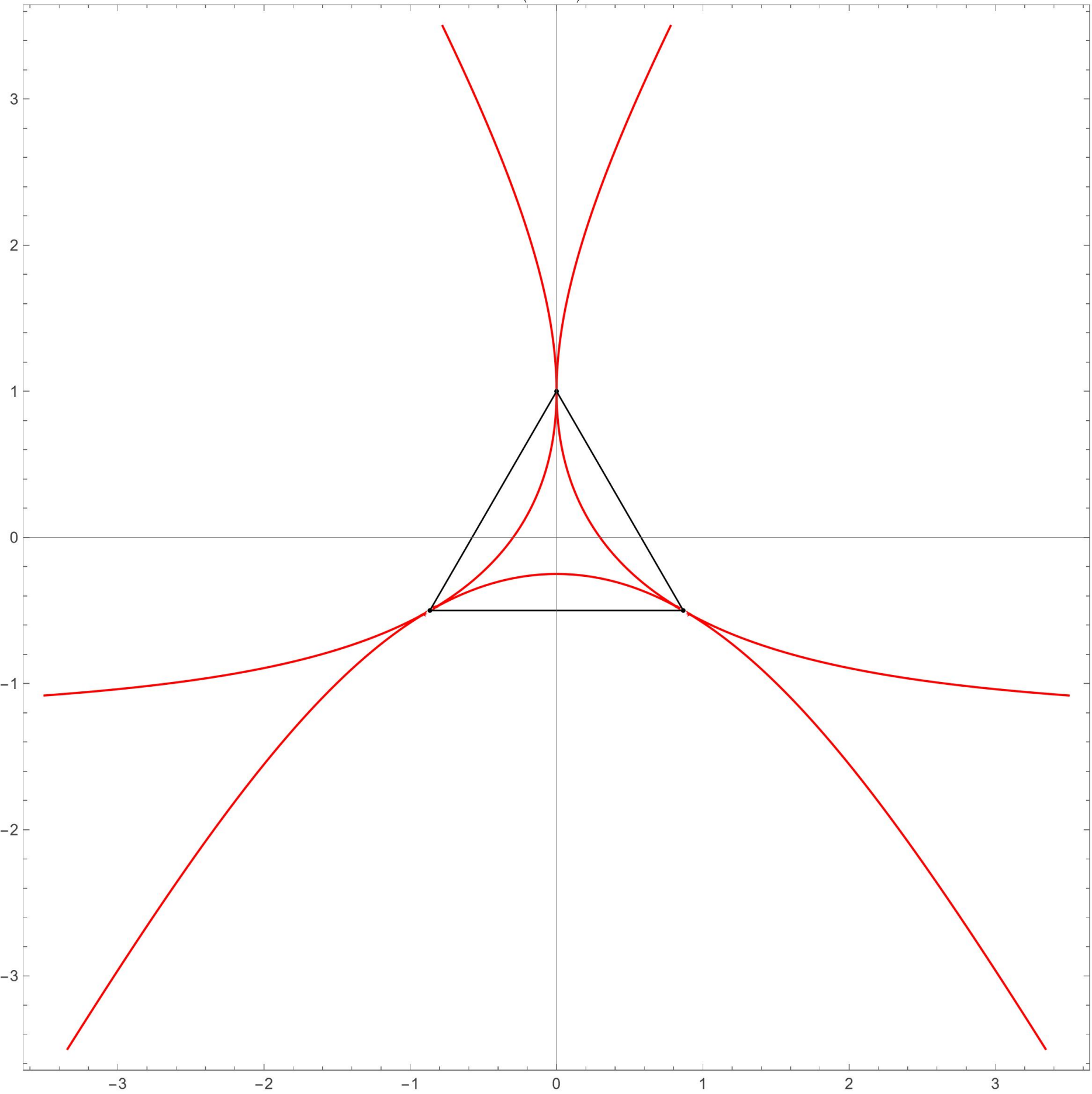
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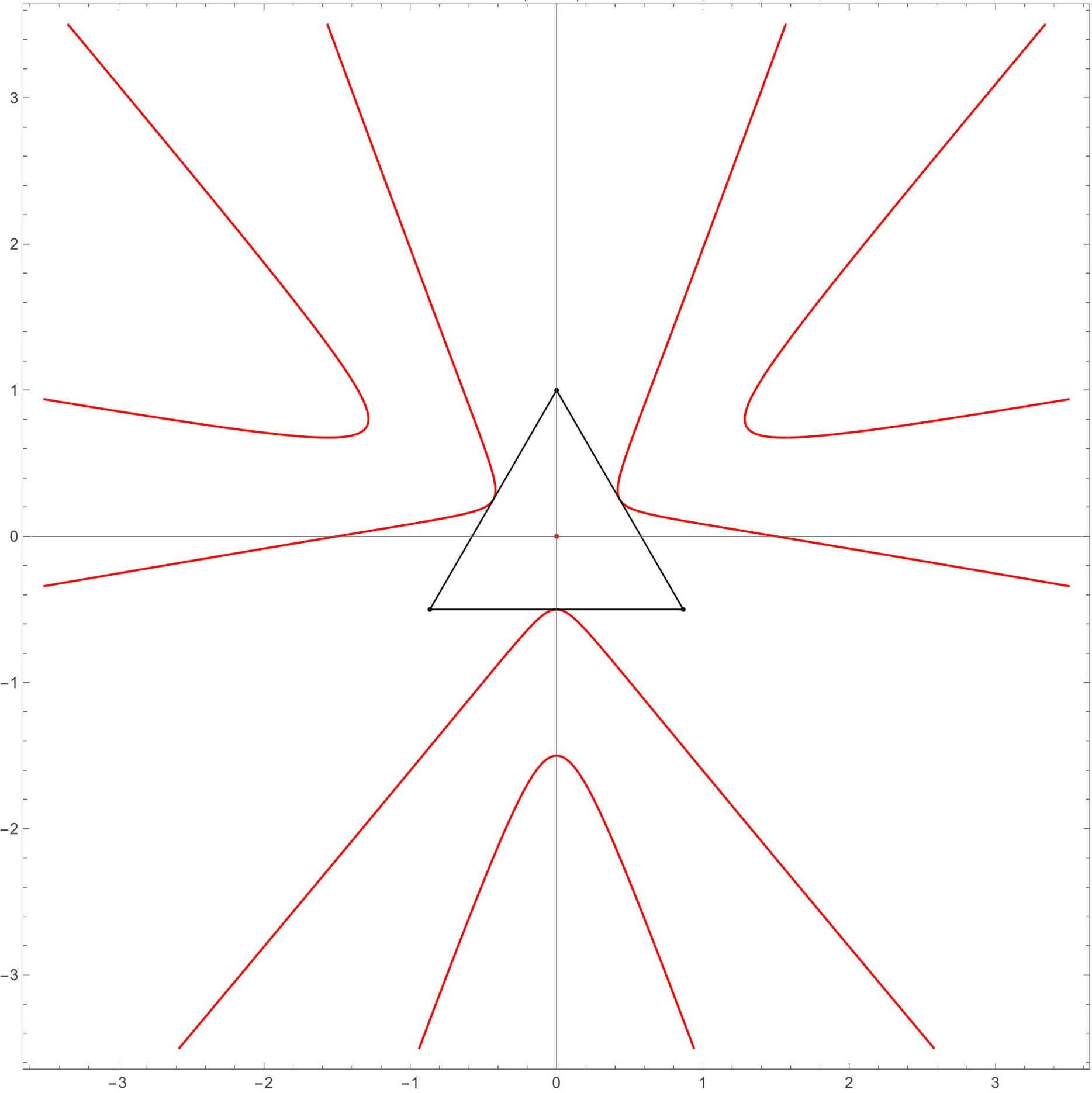
X (6162)



X (6164)



X (6166)



X (8486)

2

1

0

-1

-2

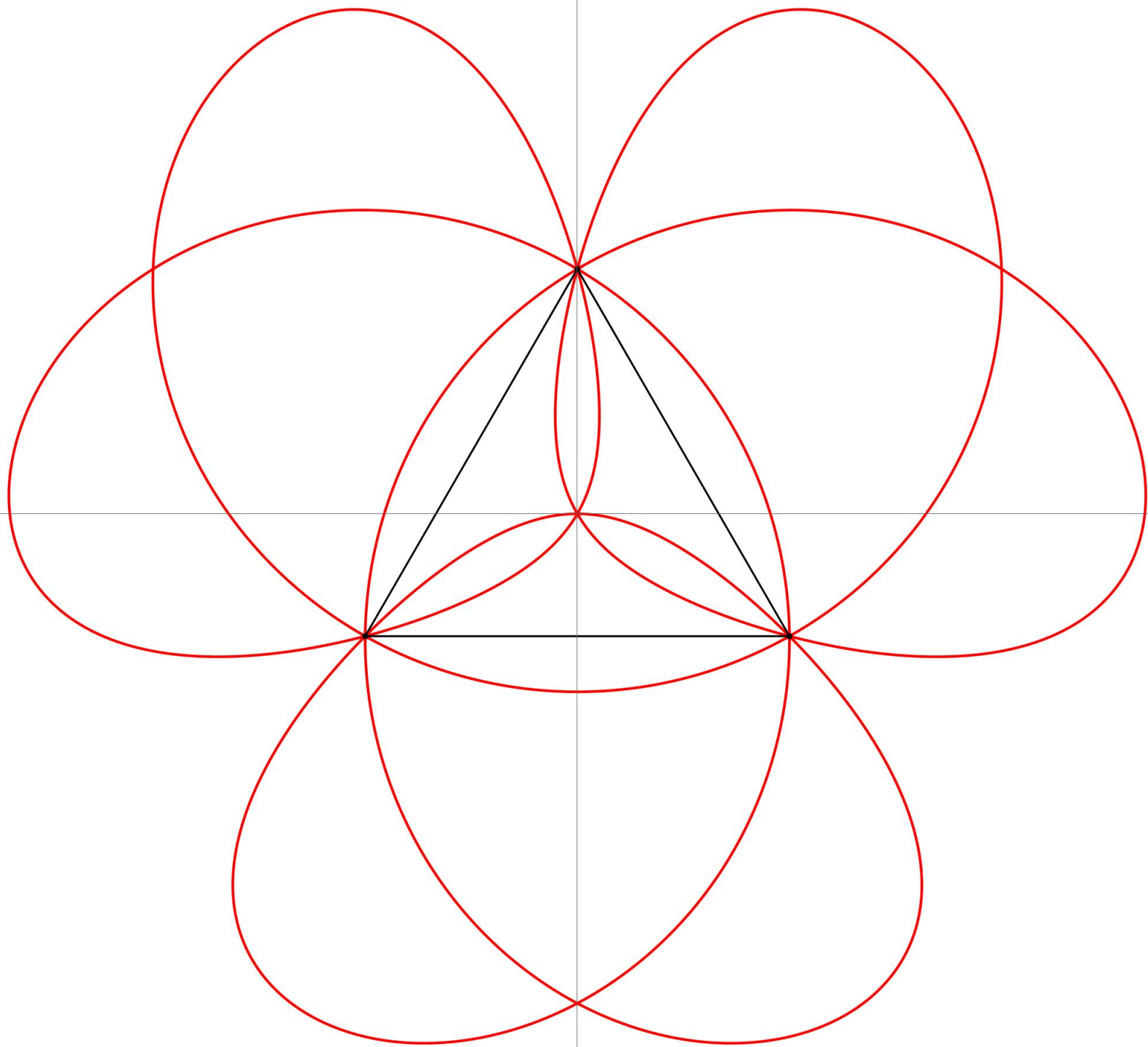
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-1

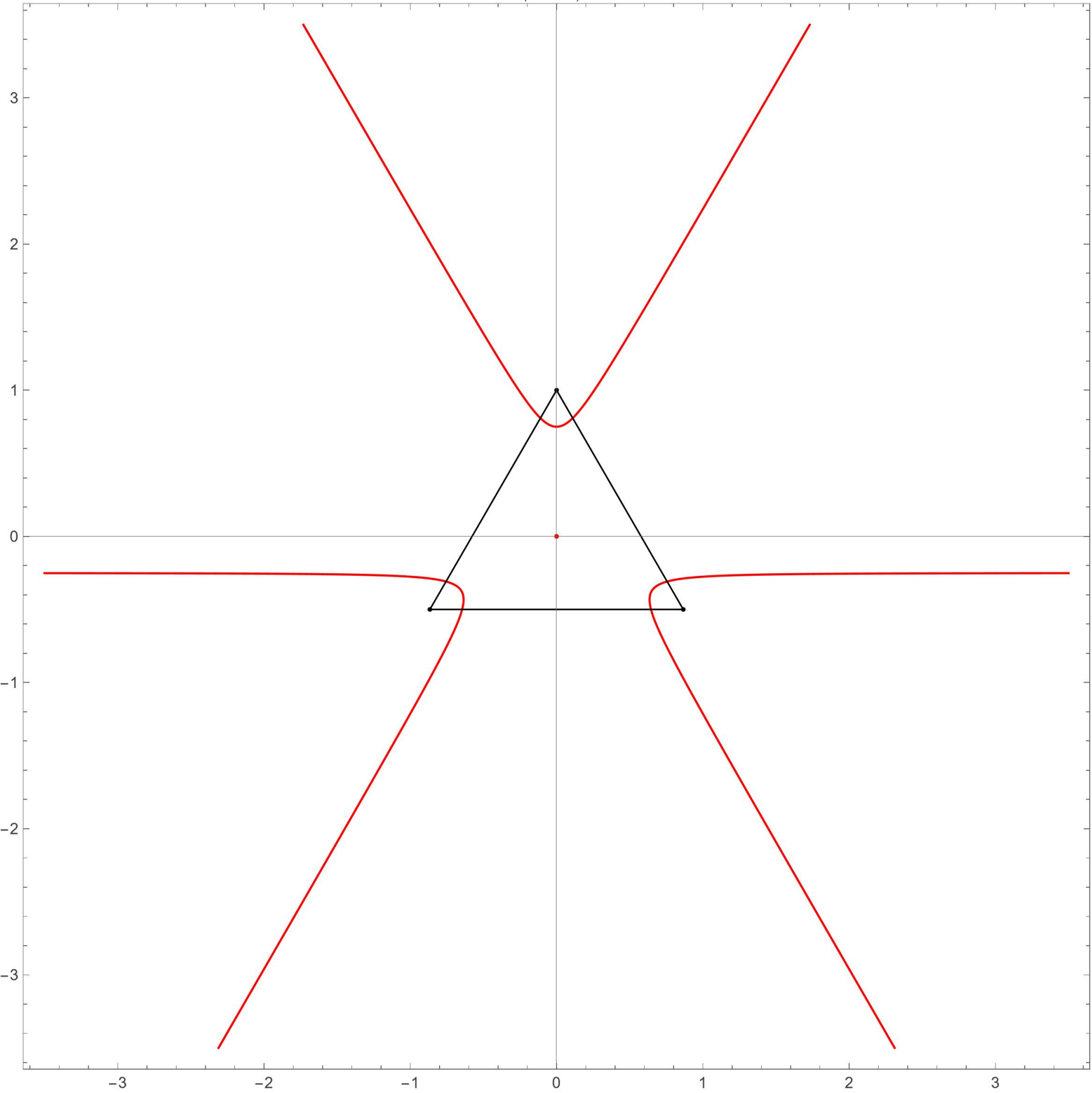
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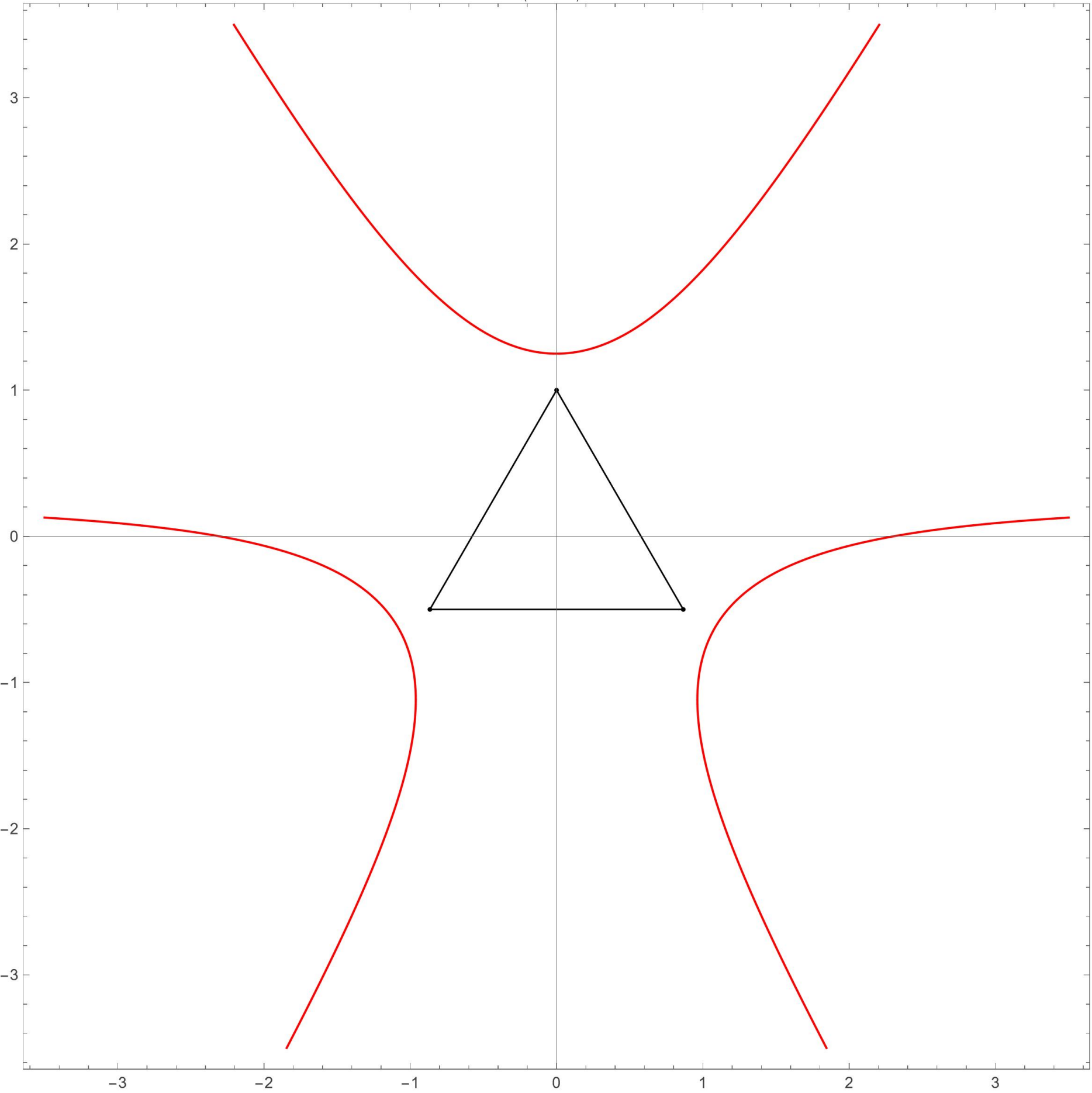
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X (8574)



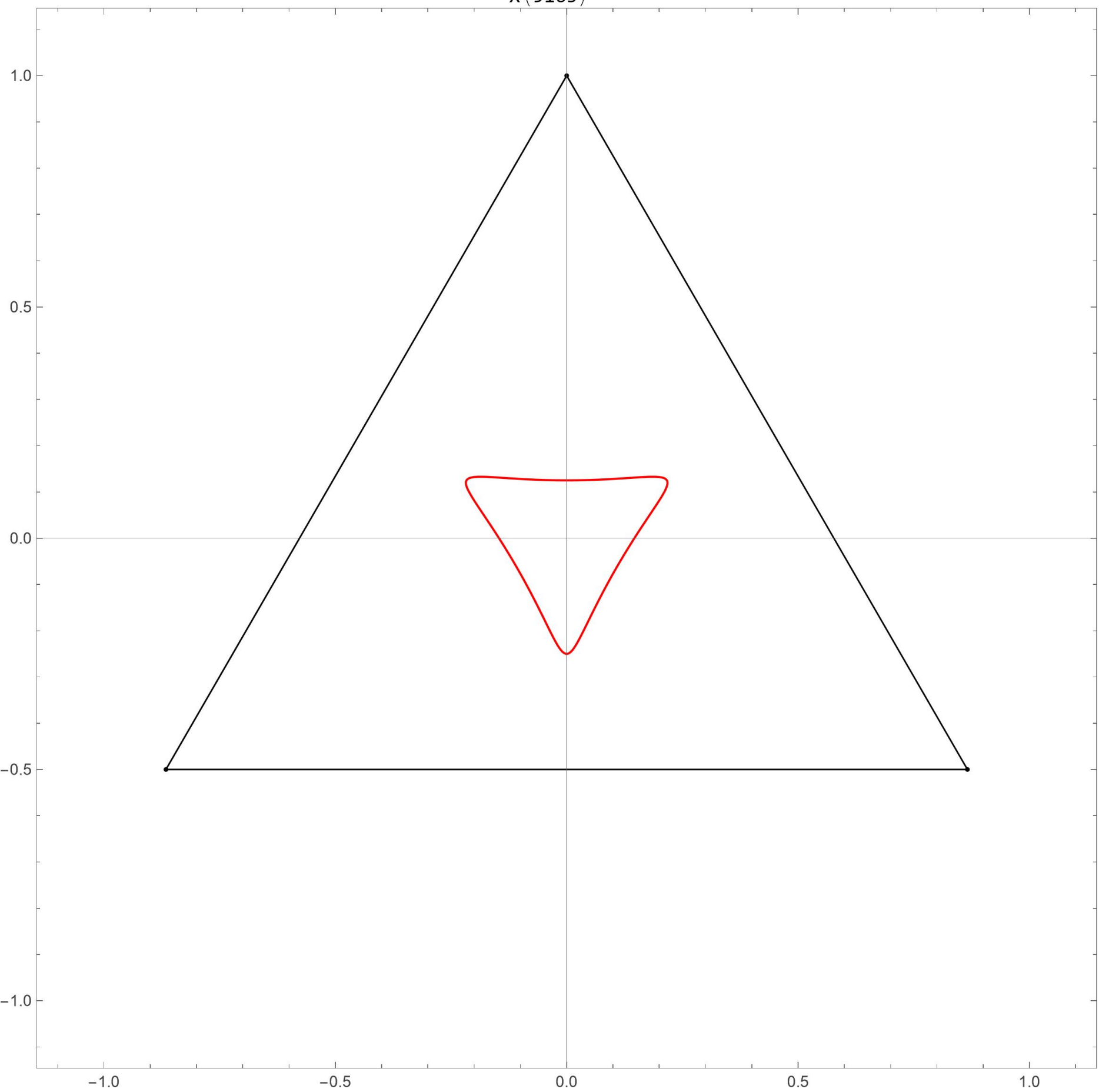
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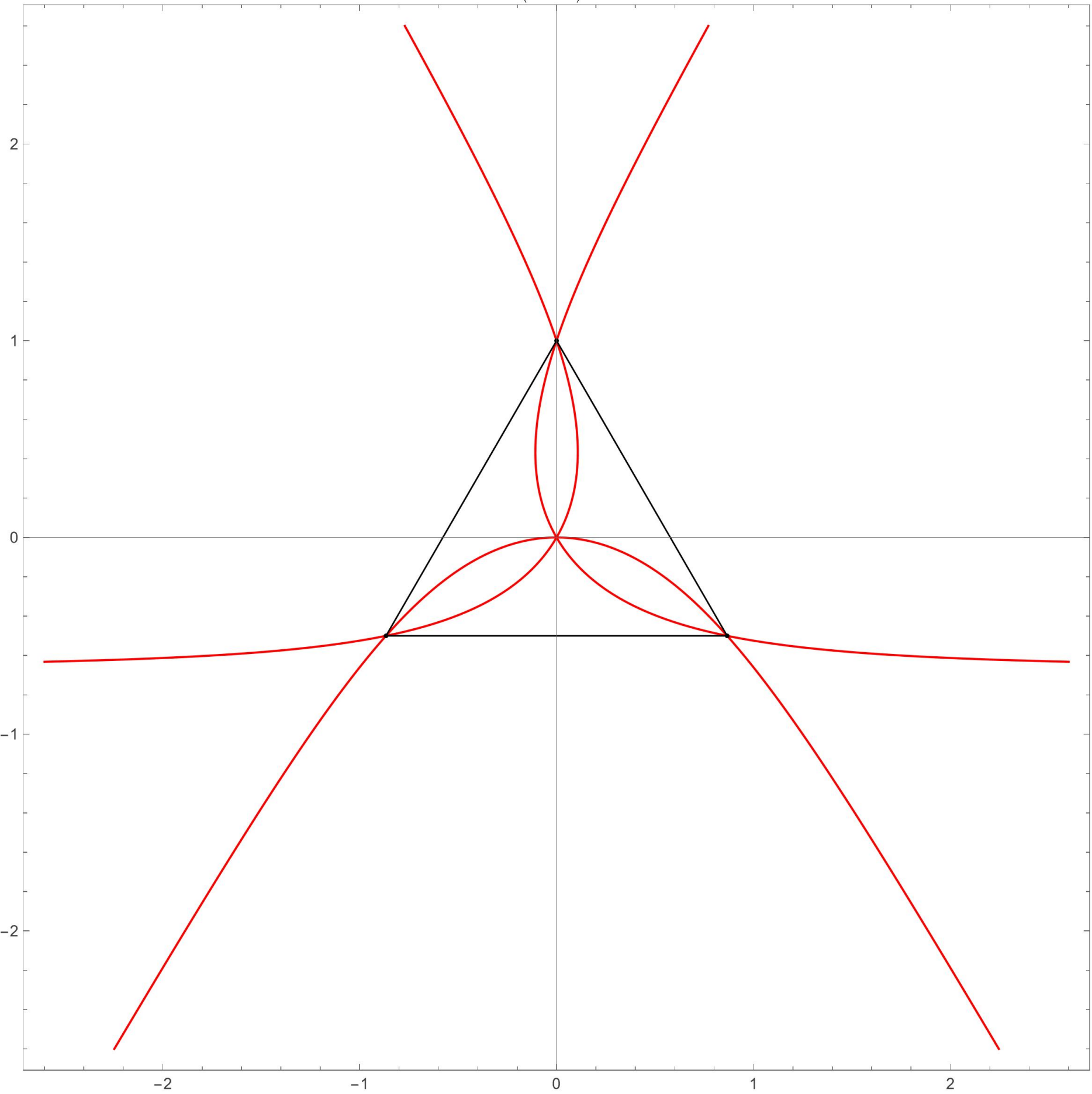
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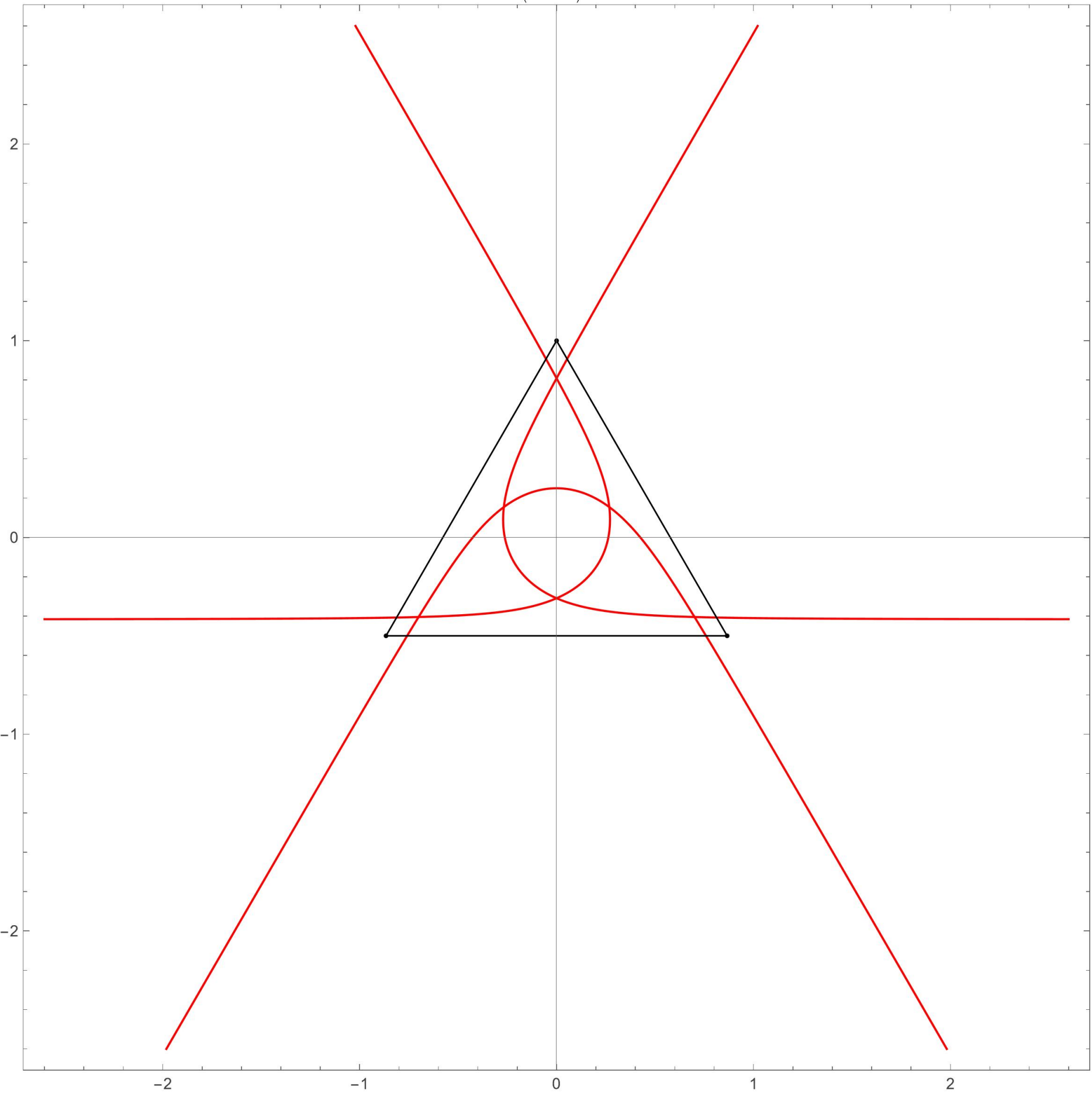
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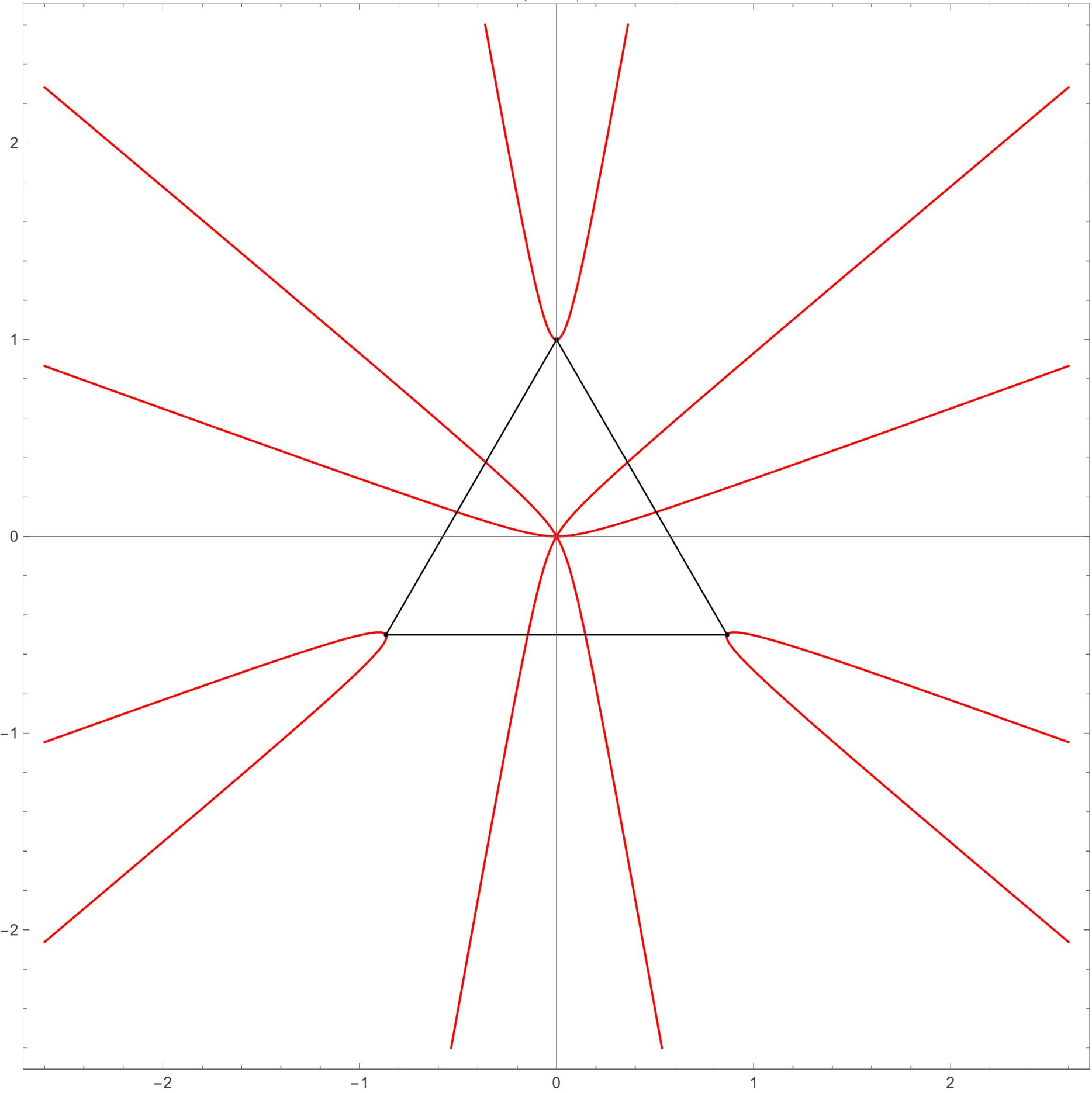
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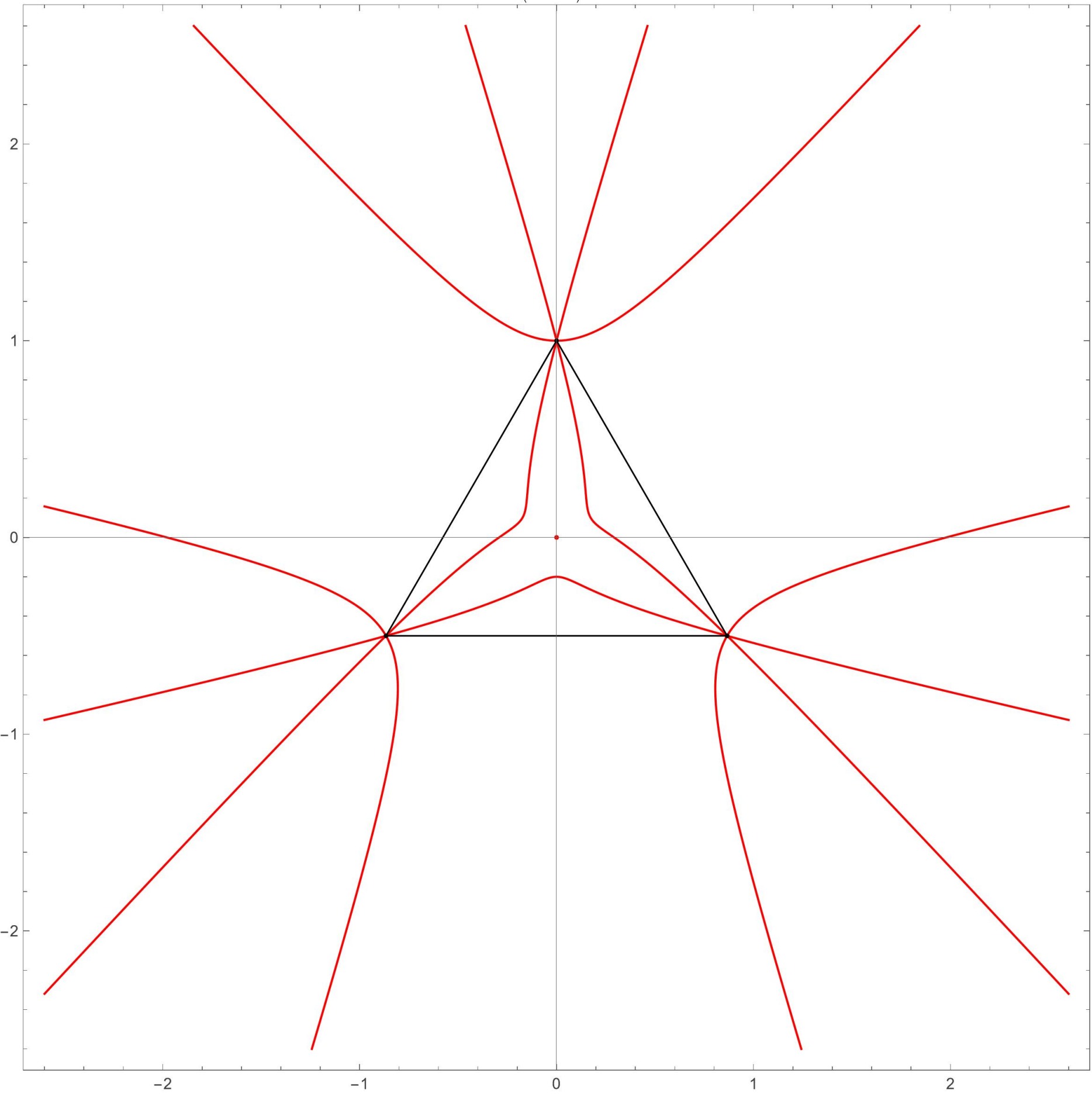
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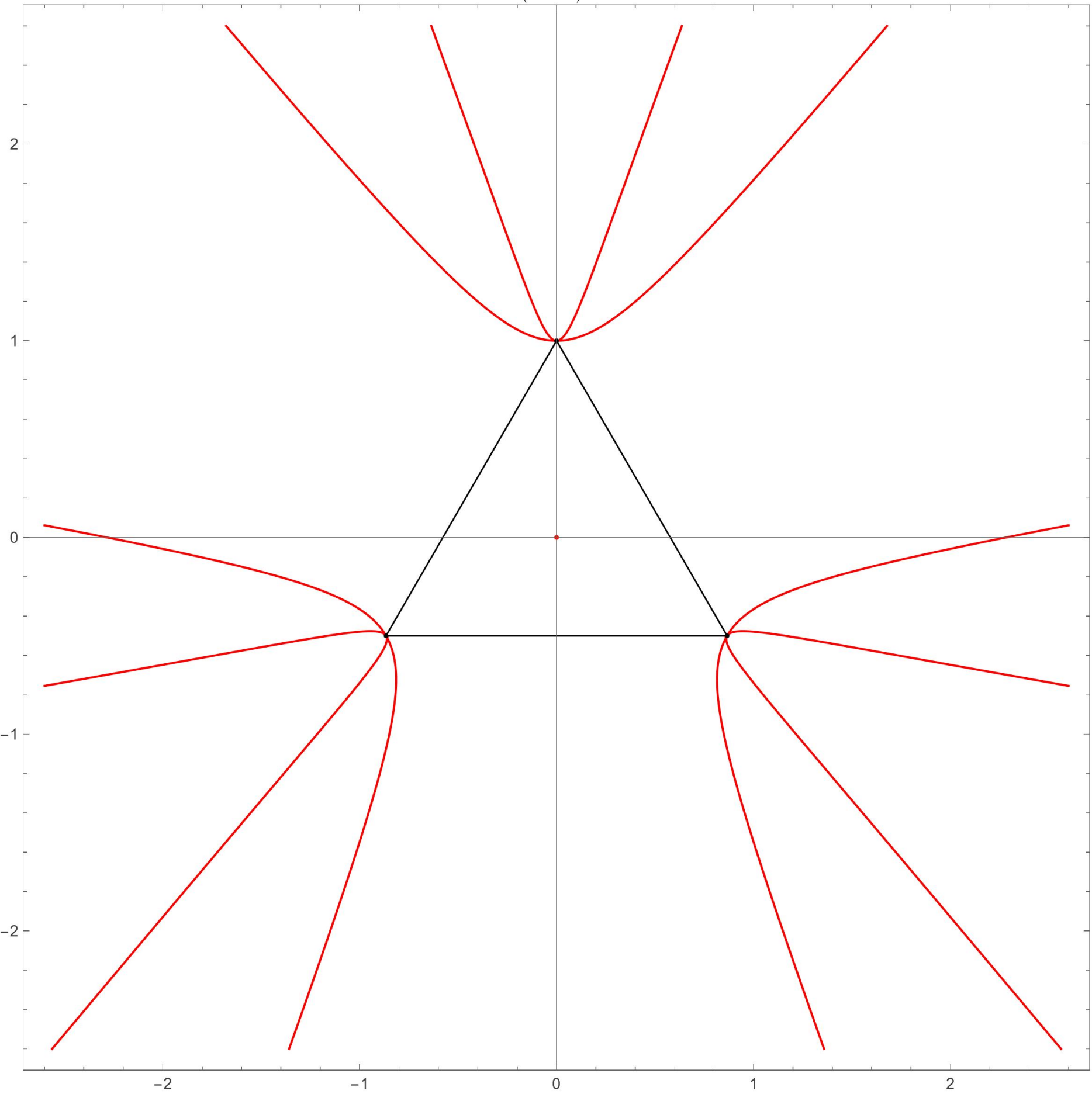
X (9270)



X (9271)



X (9272)



X (9474)

1.5

1.0

0.5

0.0

-0.5

-1.0

-1.5

-1.5

-1.0

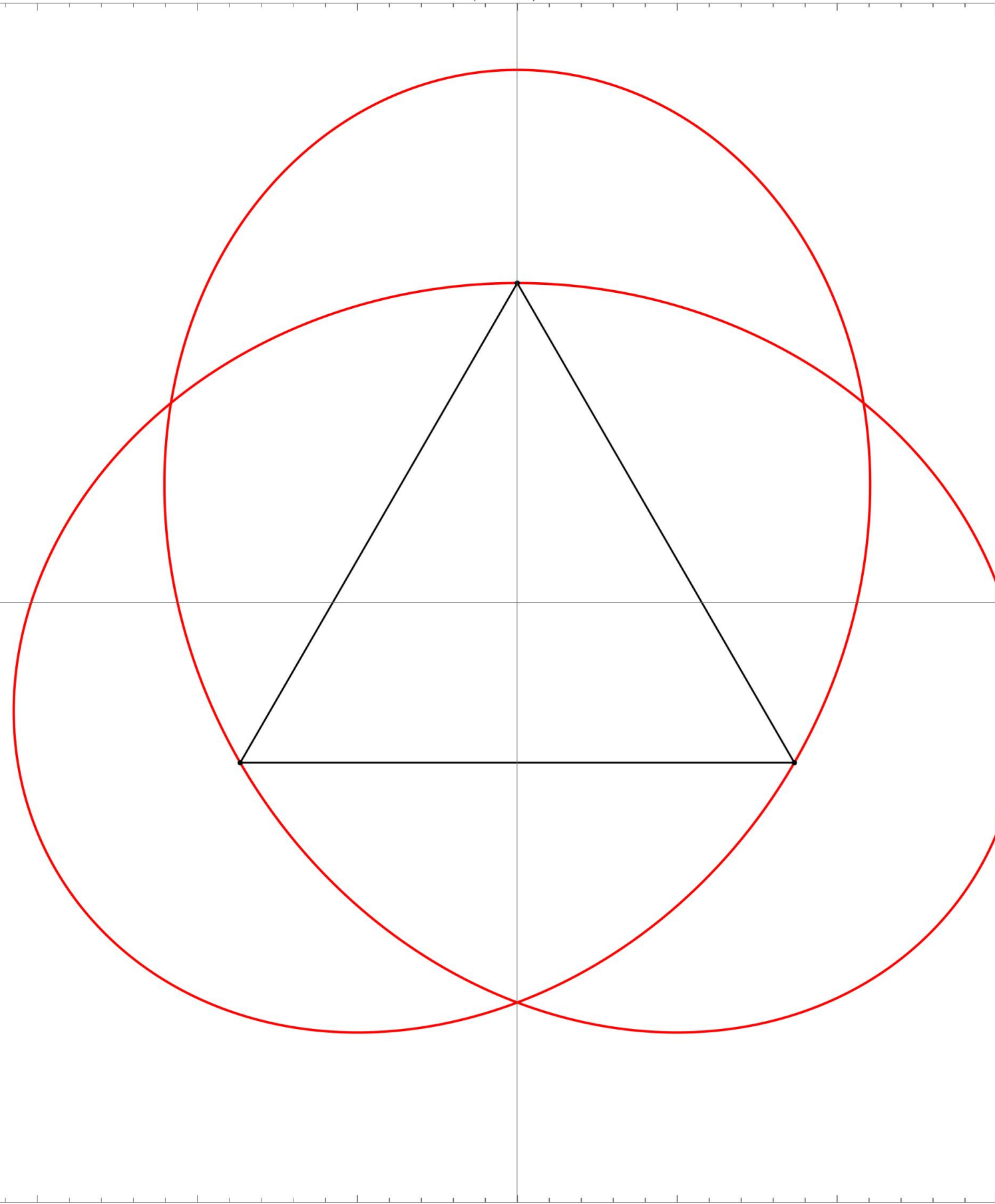
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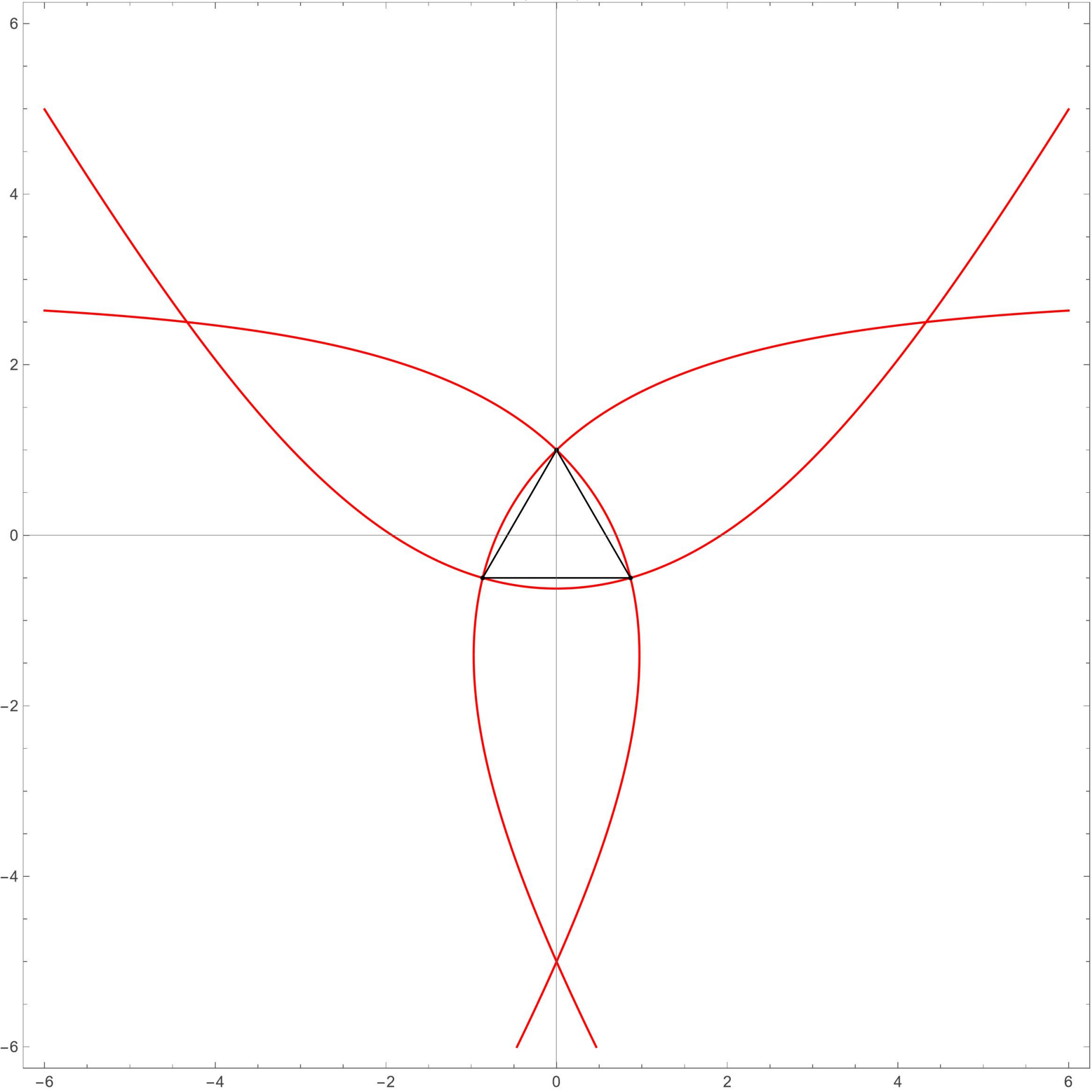
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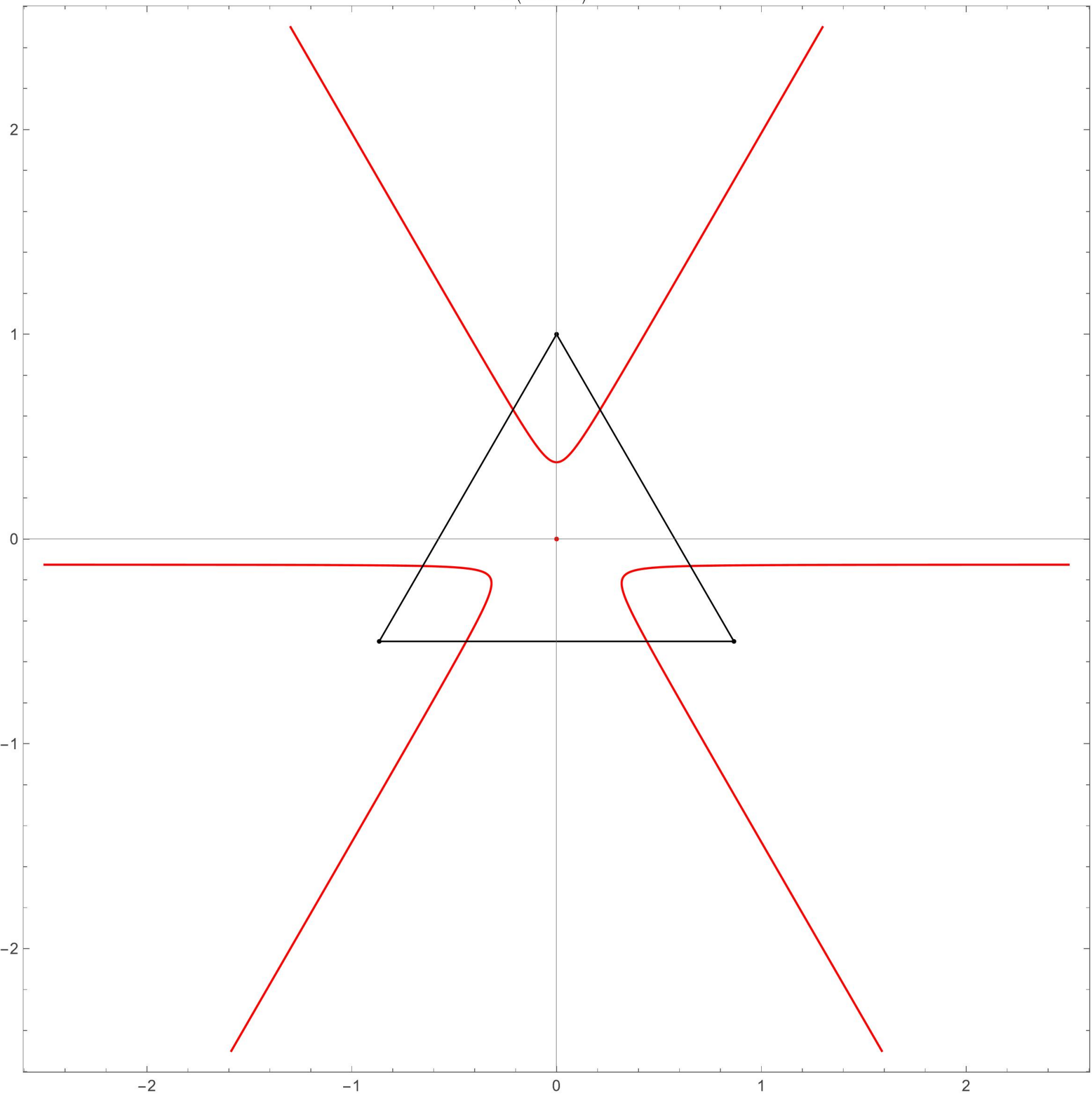
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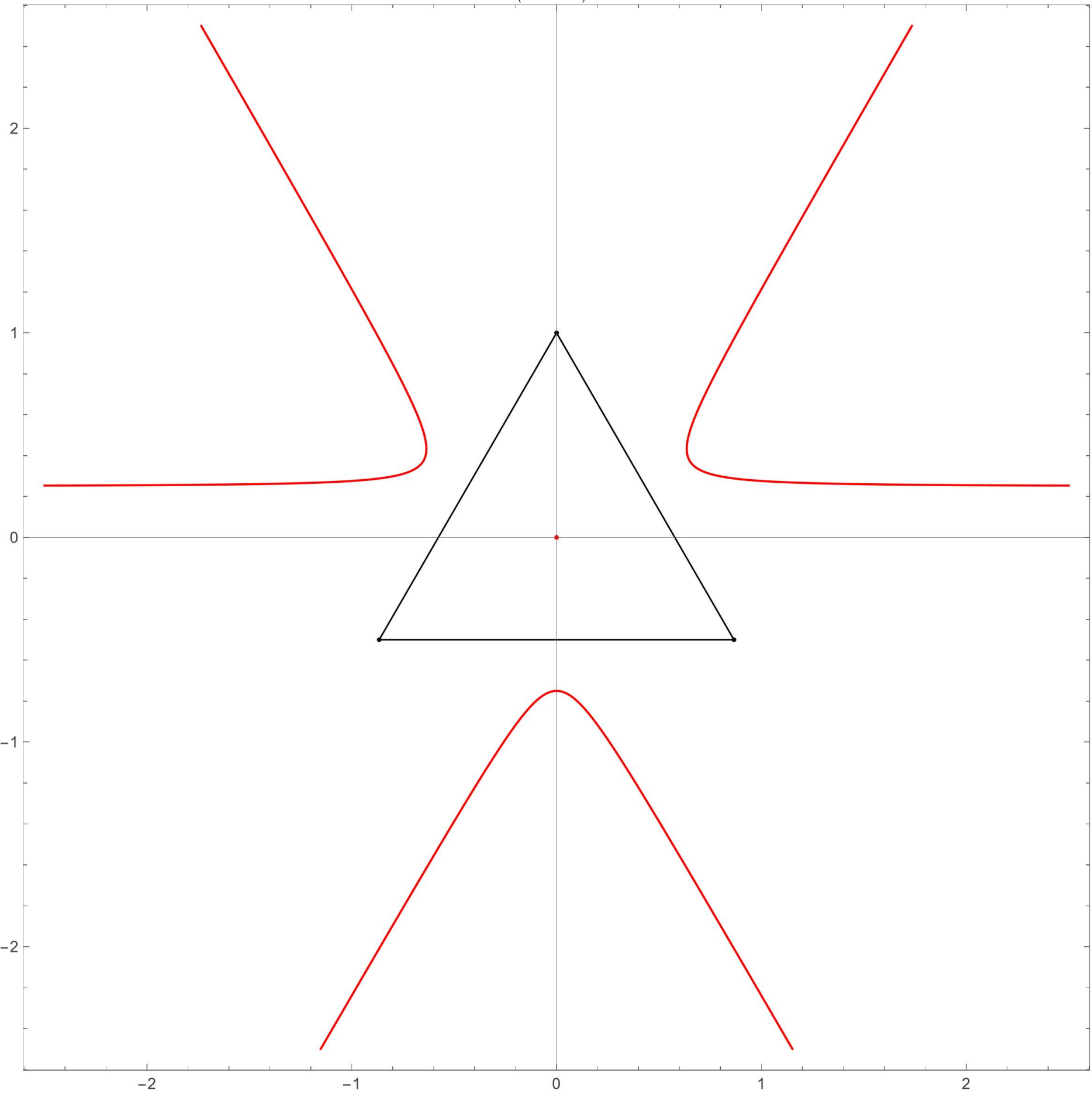
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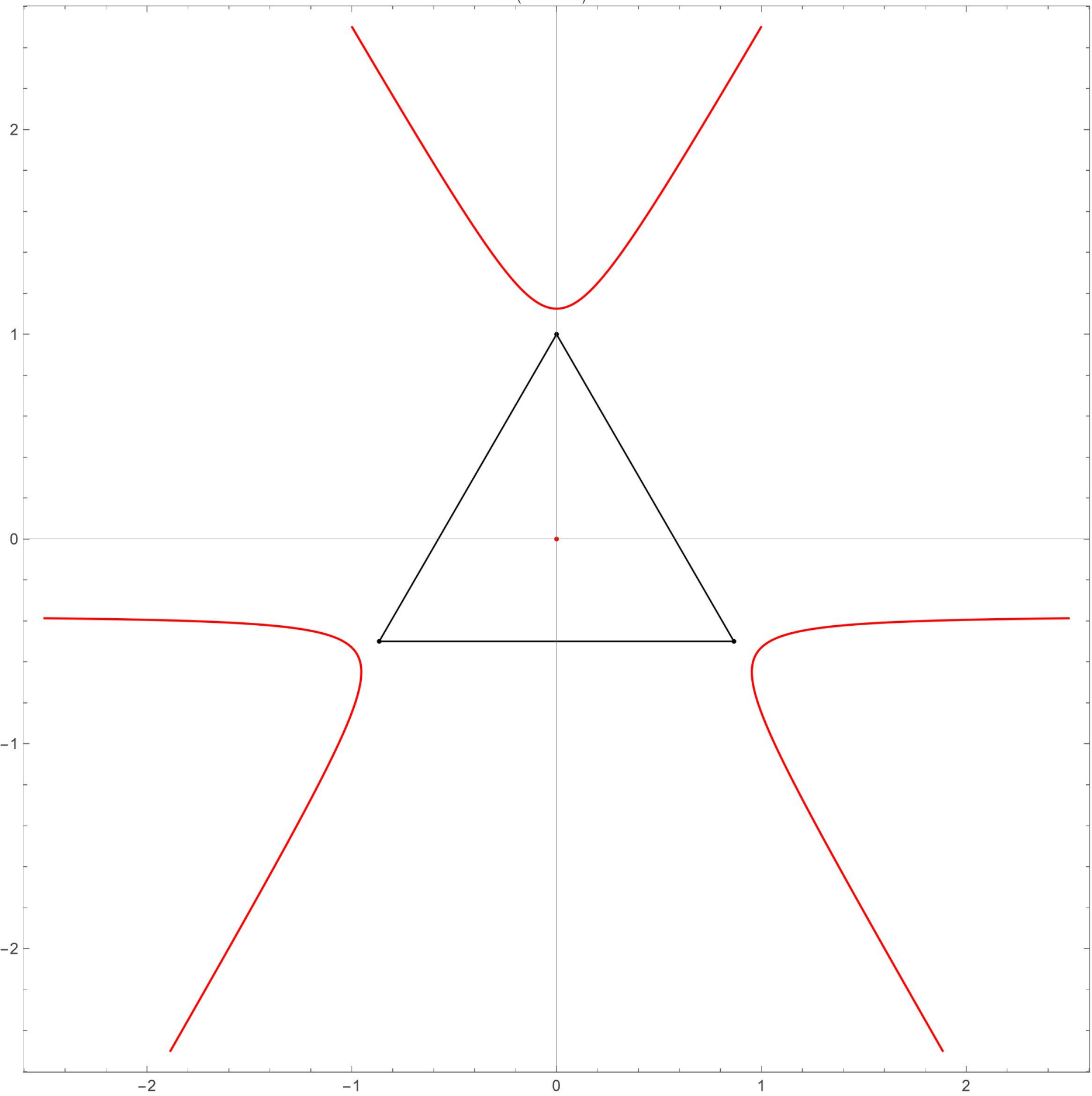
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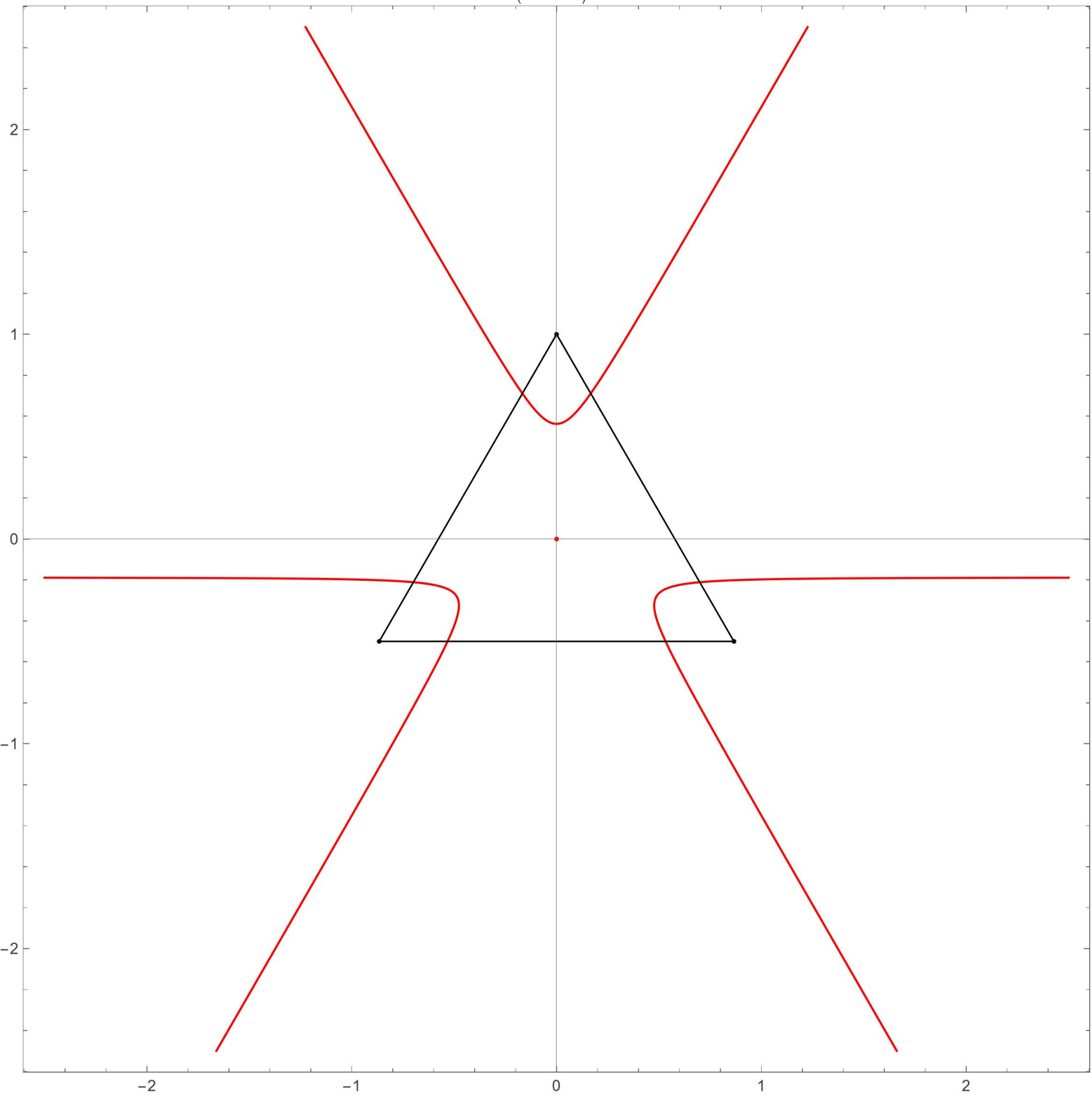
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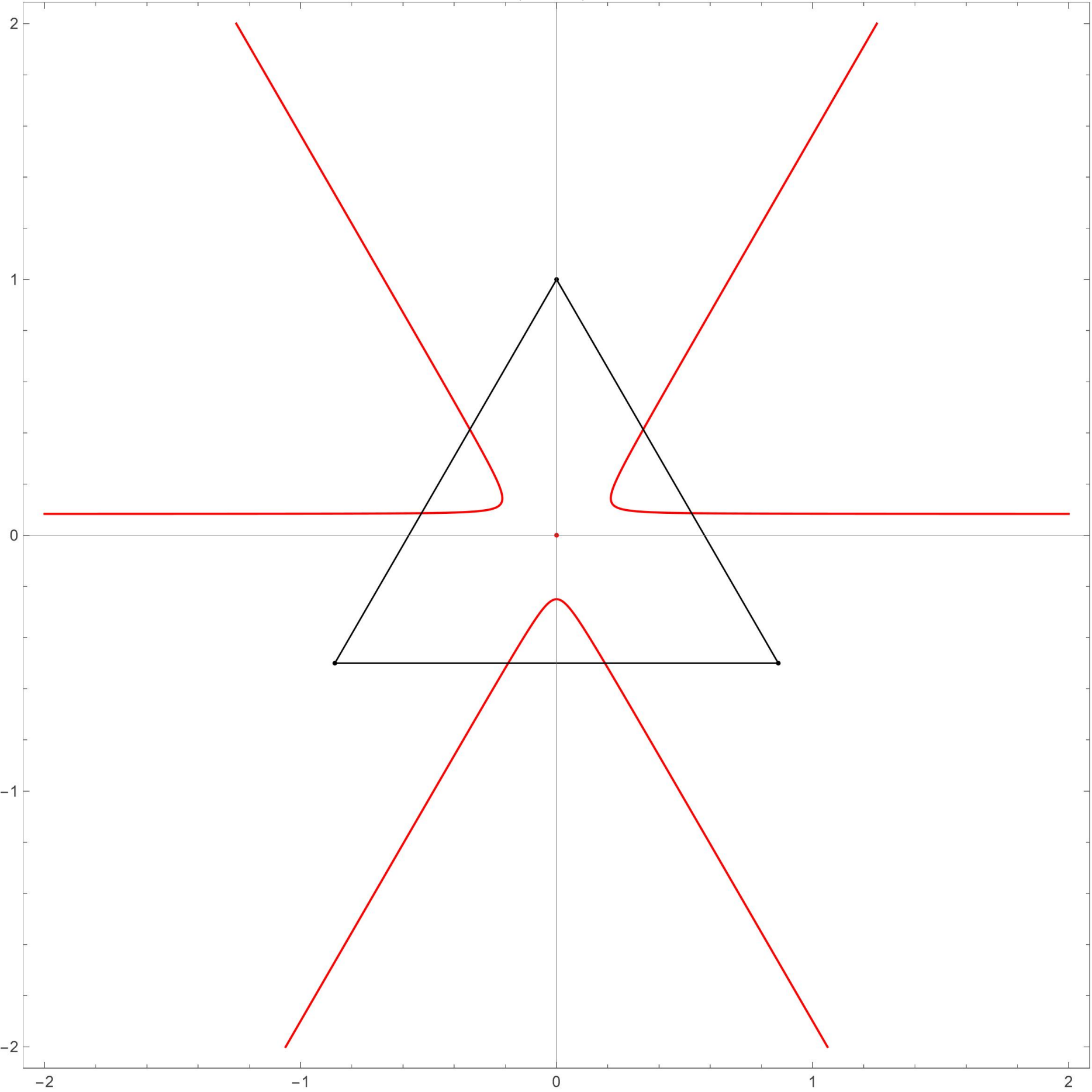
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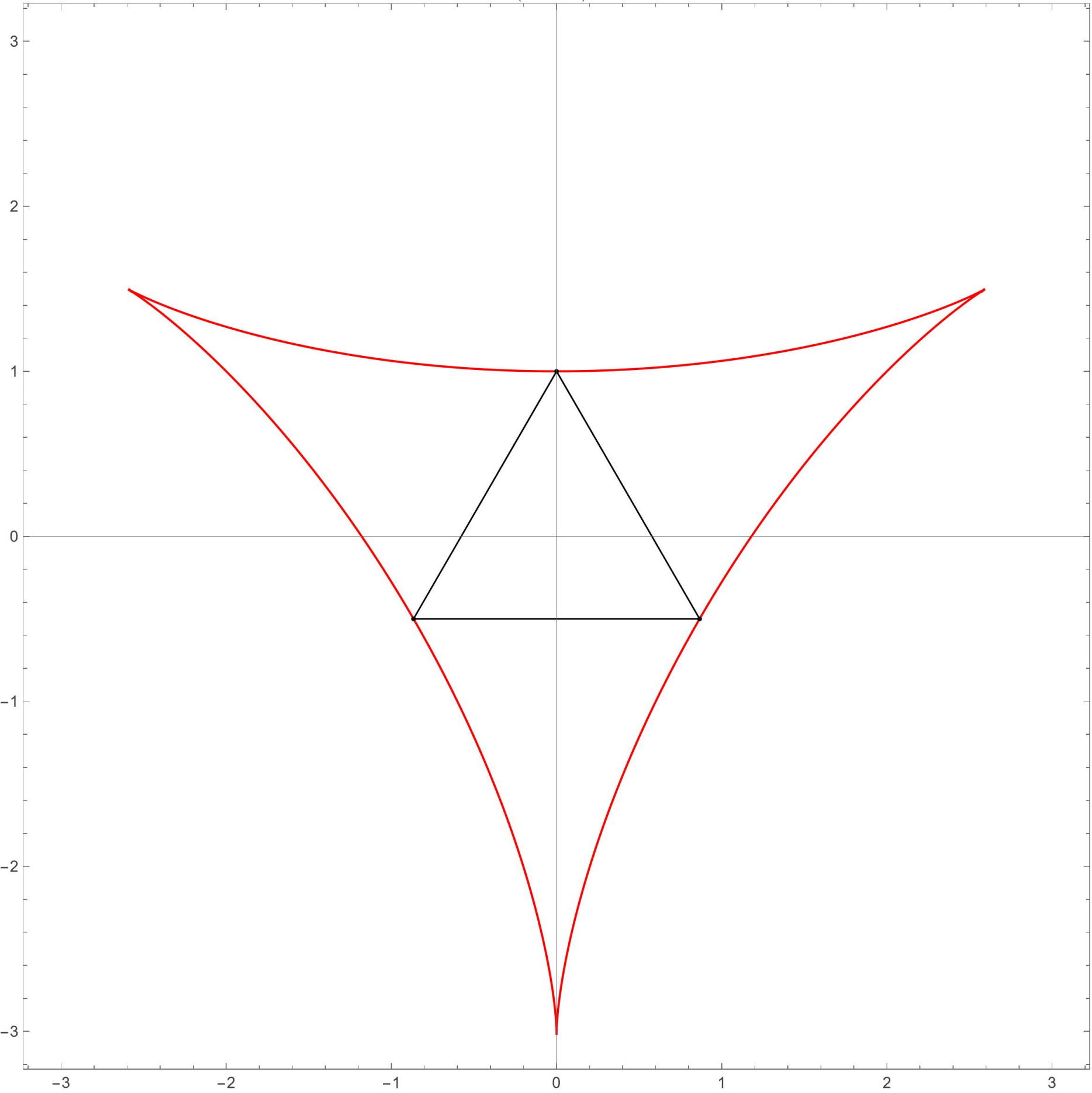
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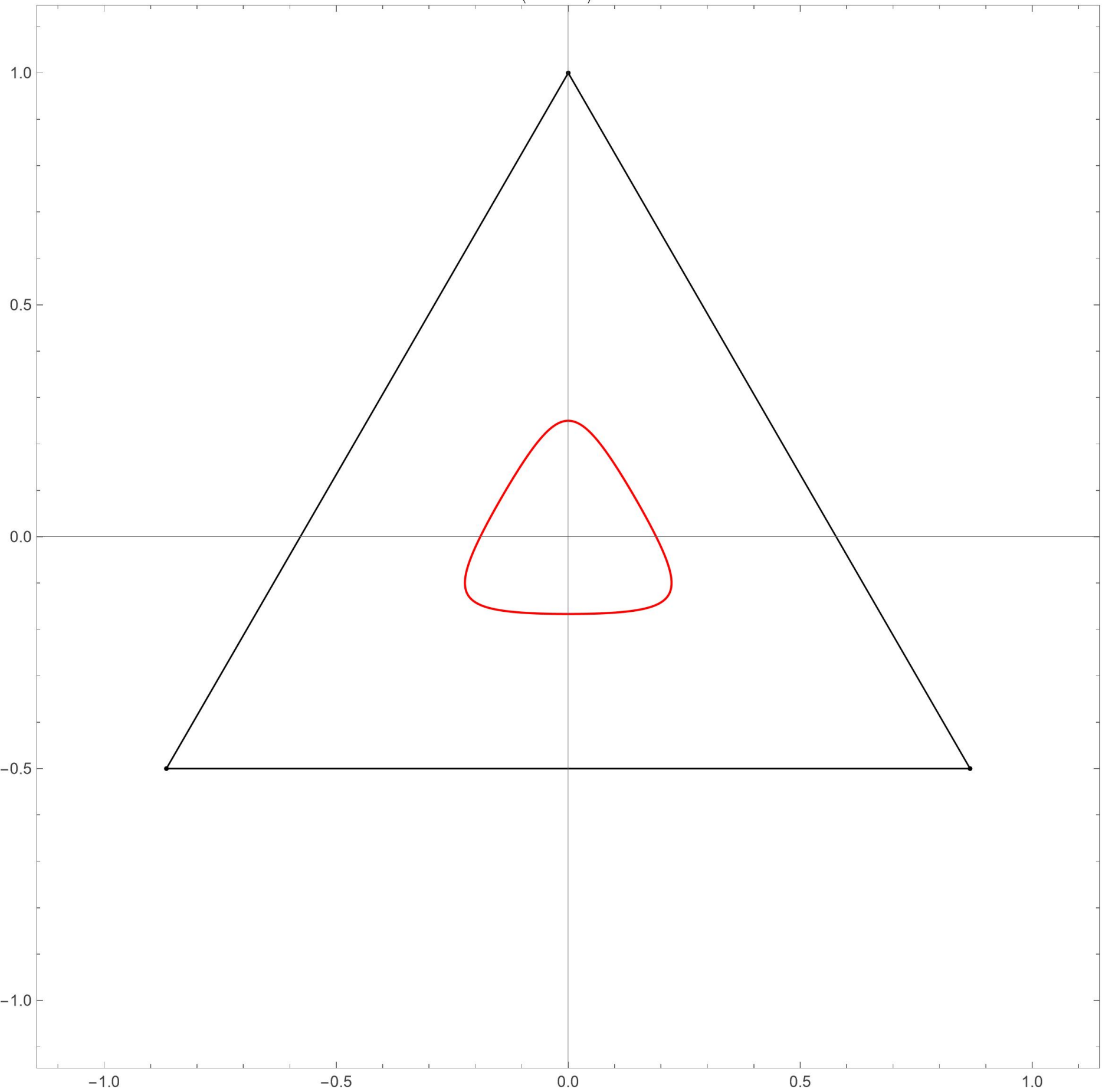
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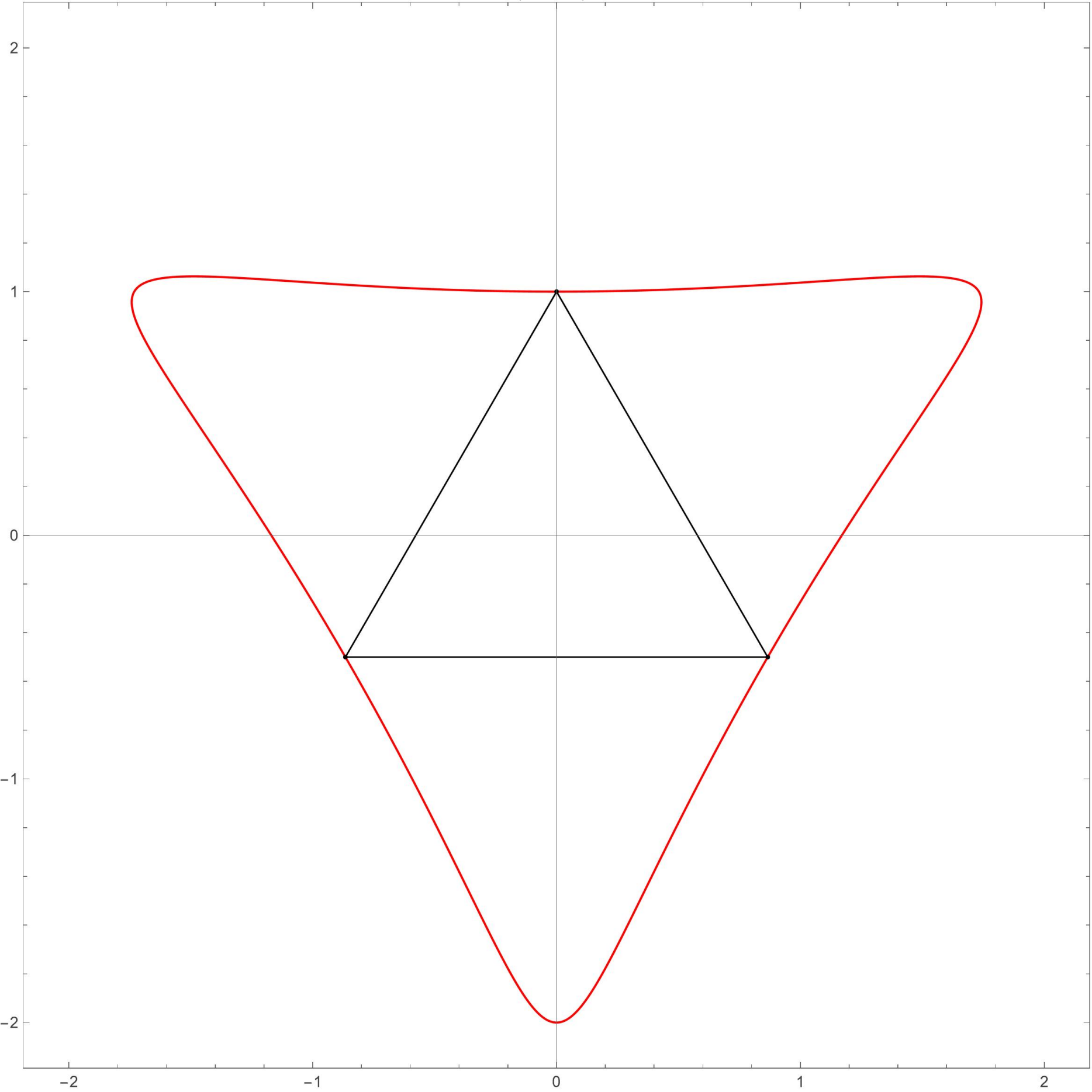
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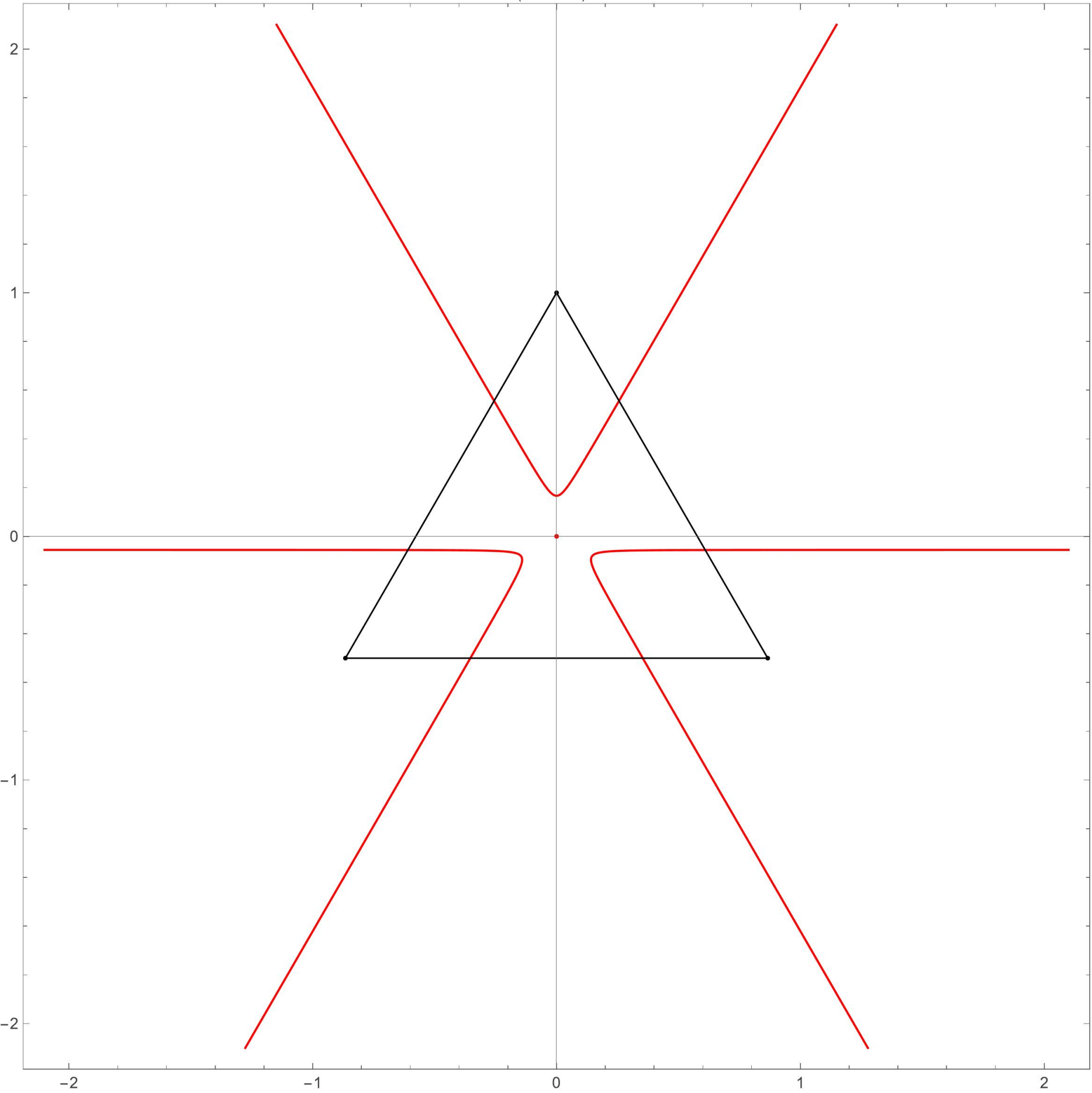
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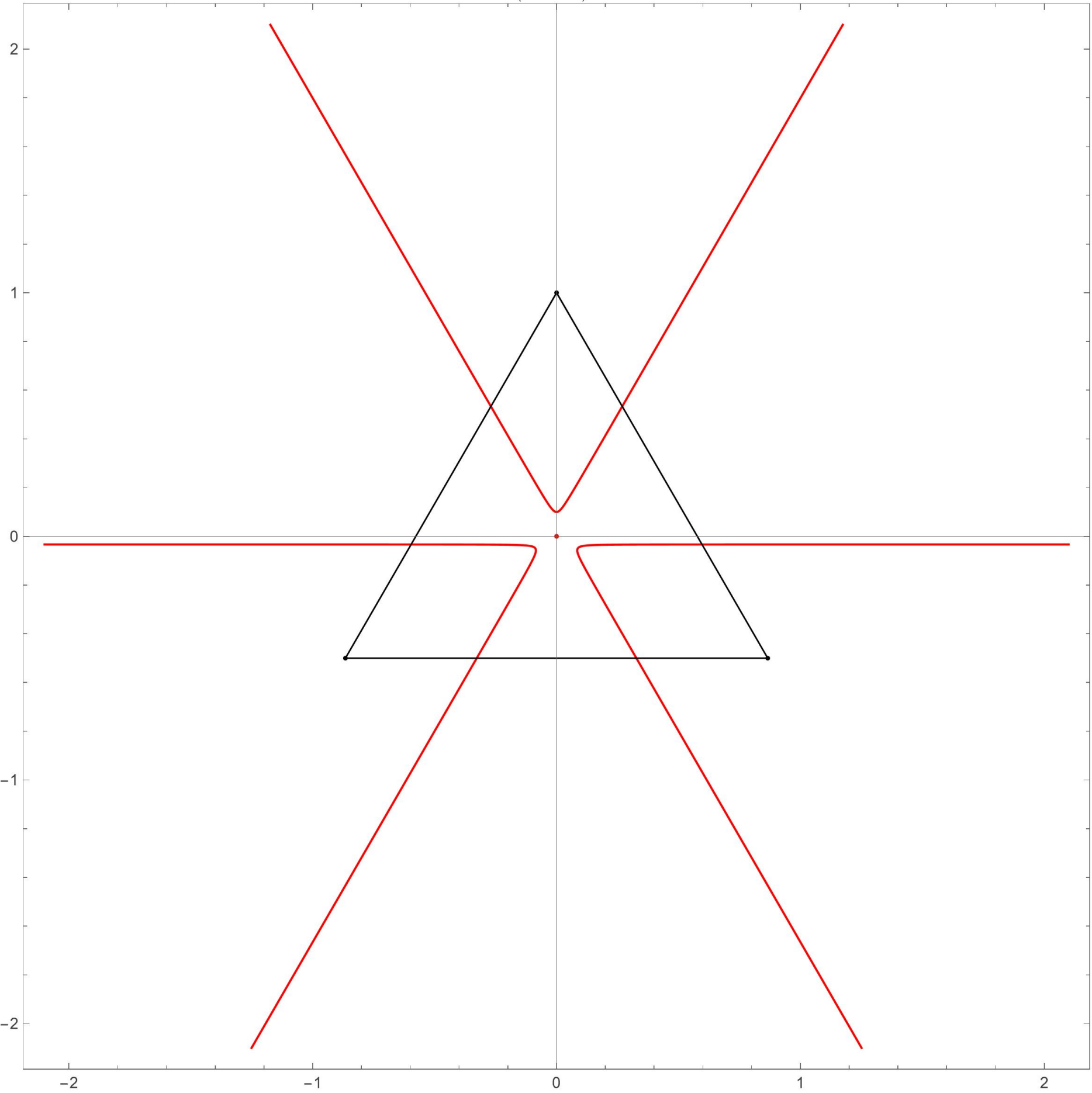
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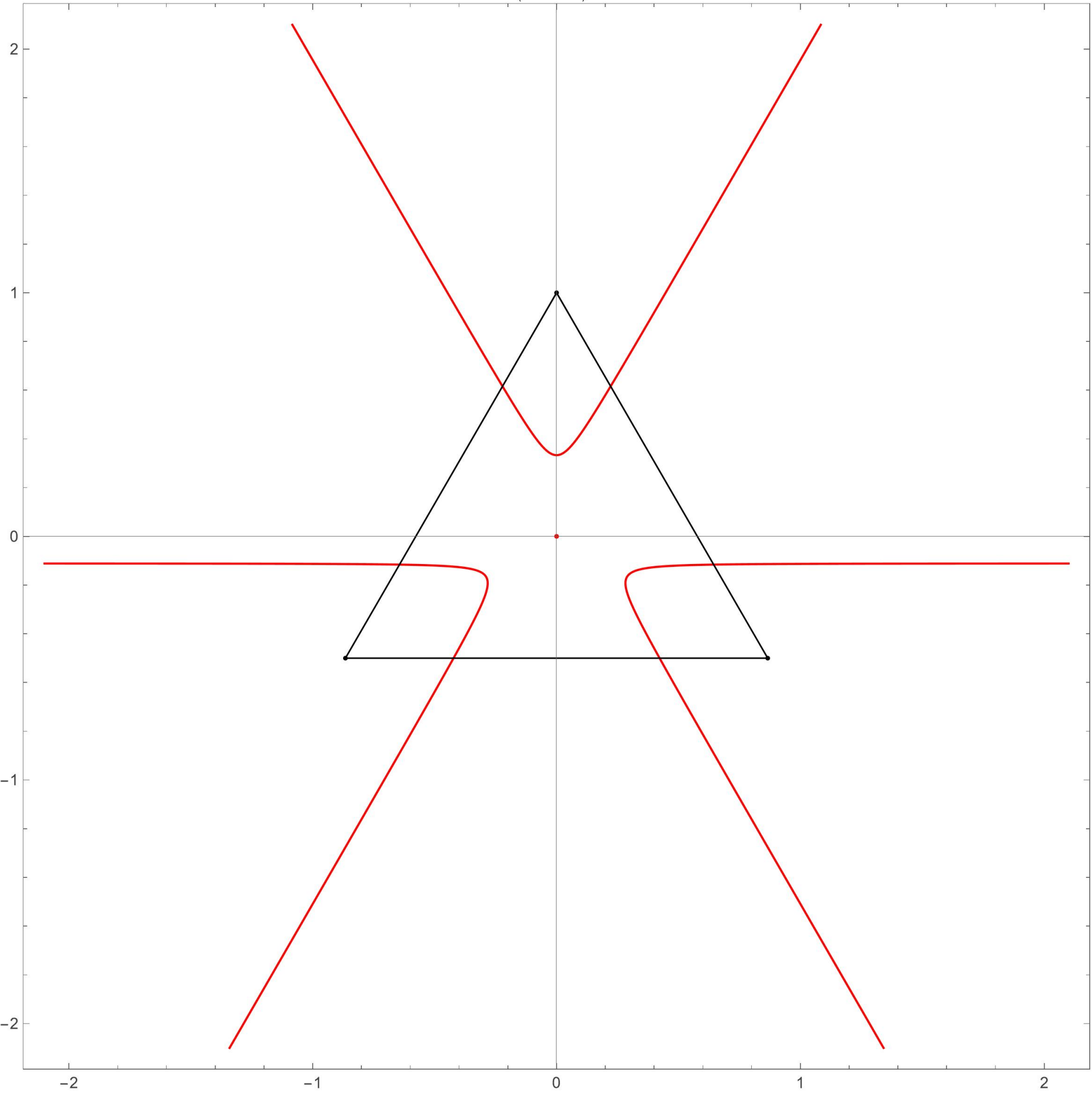
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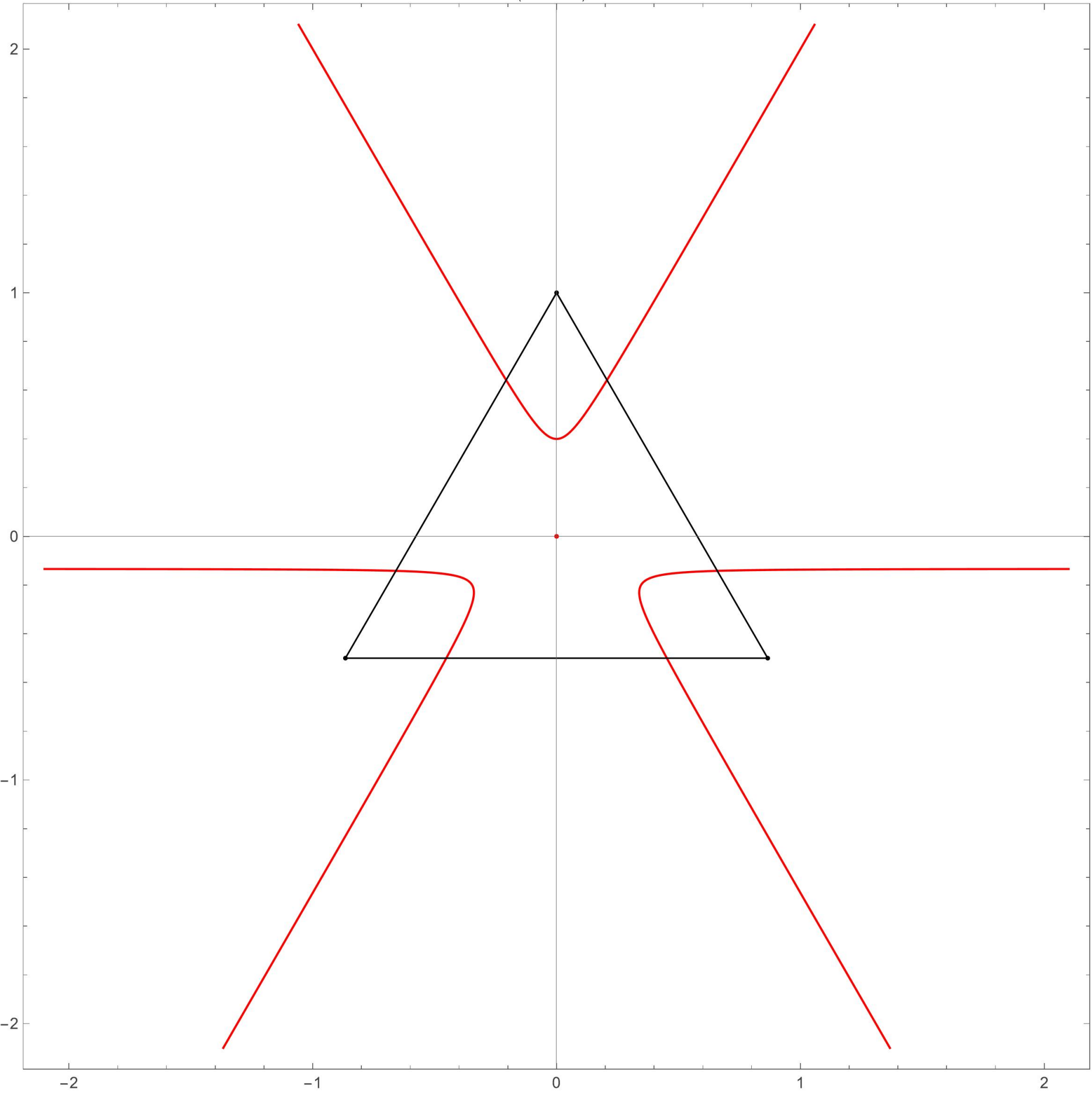
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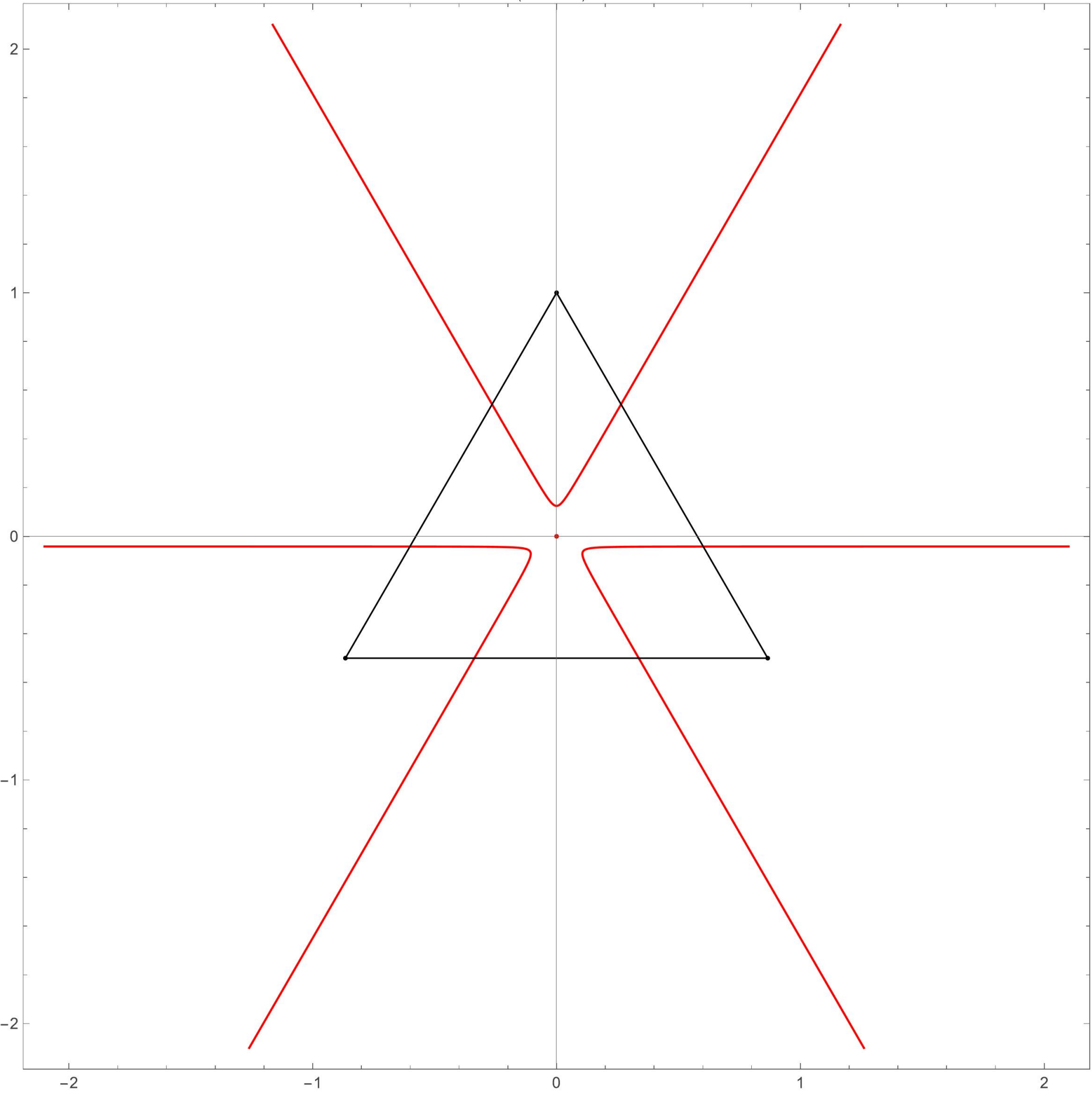
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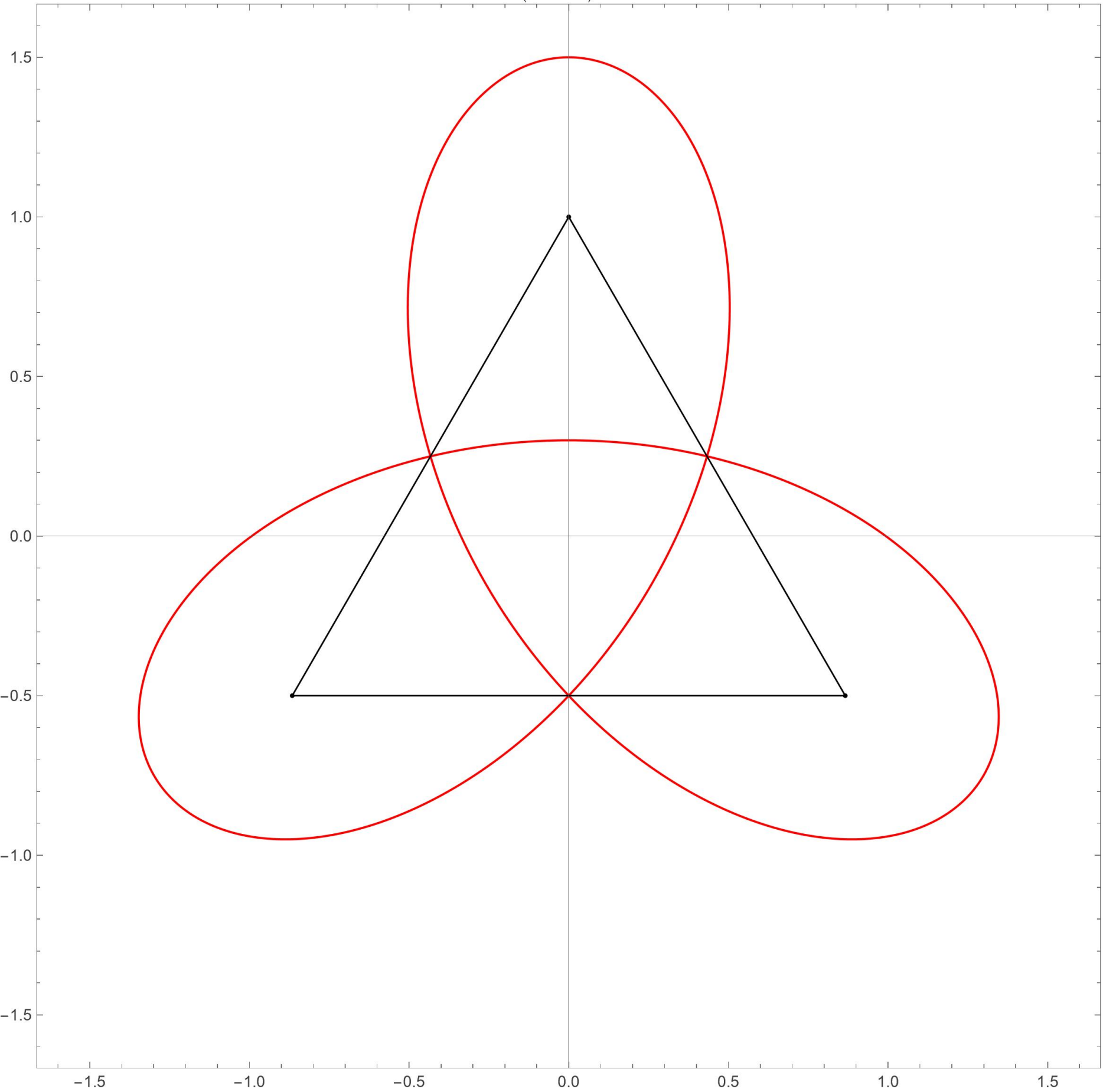
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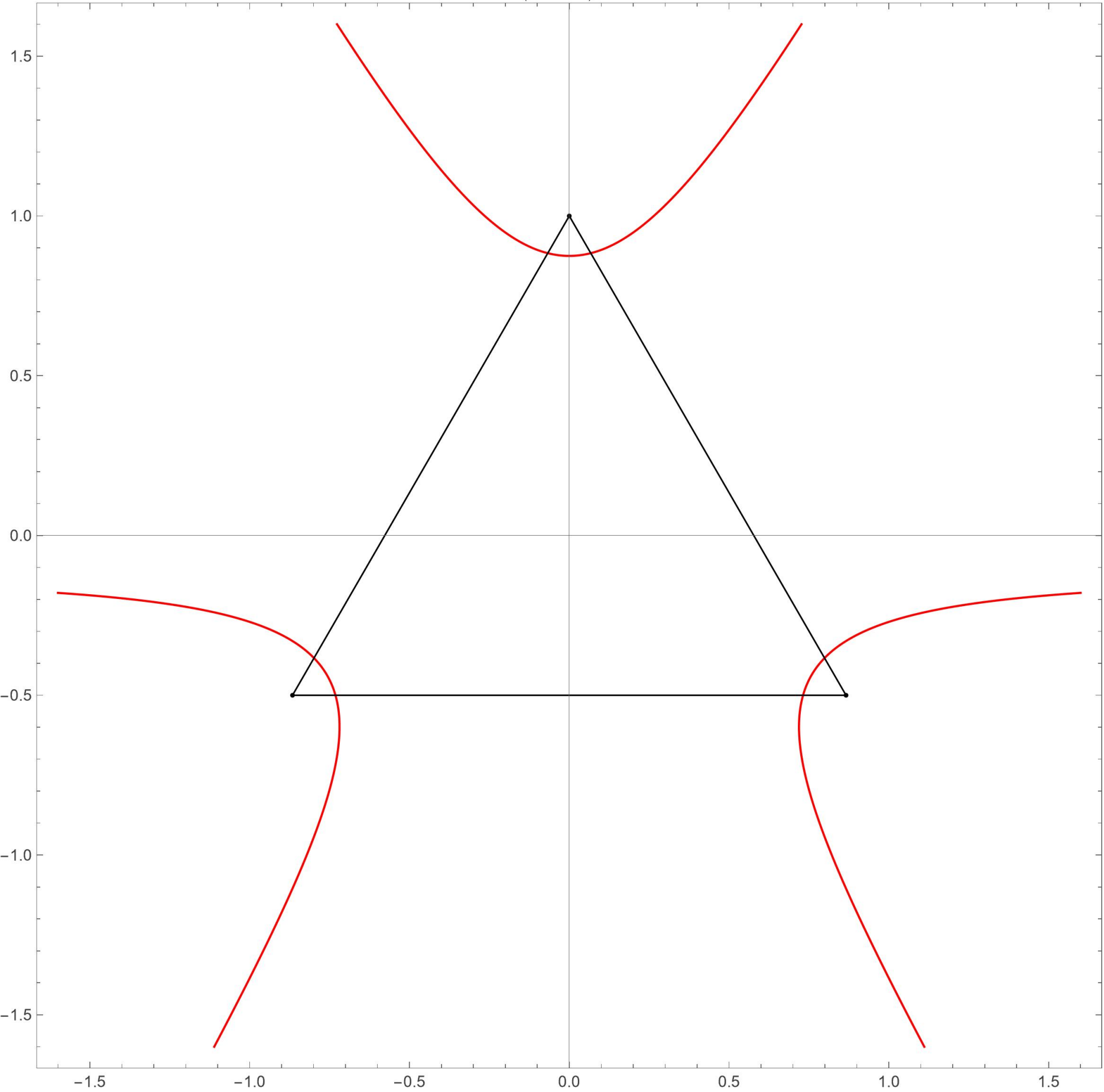
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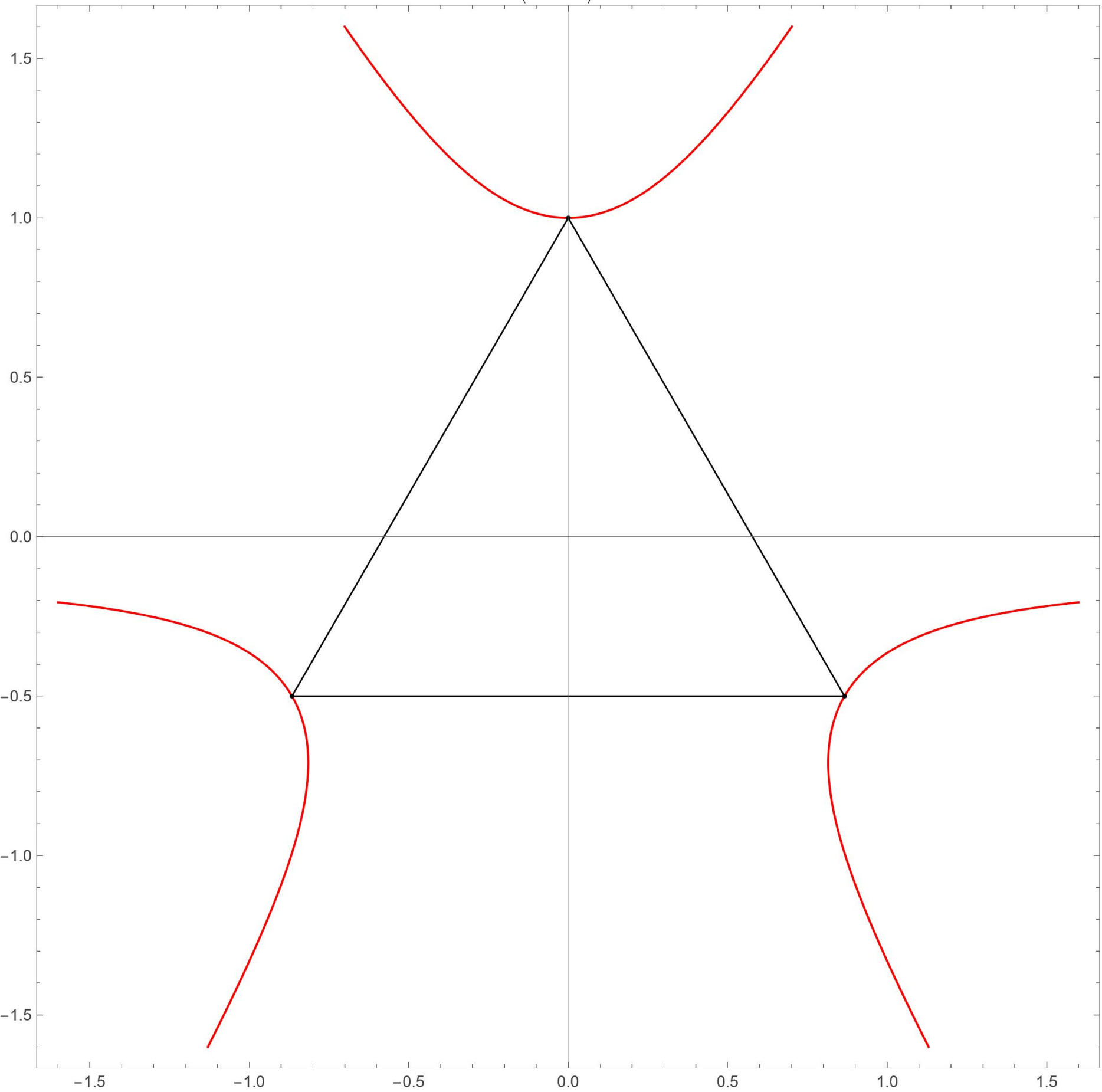
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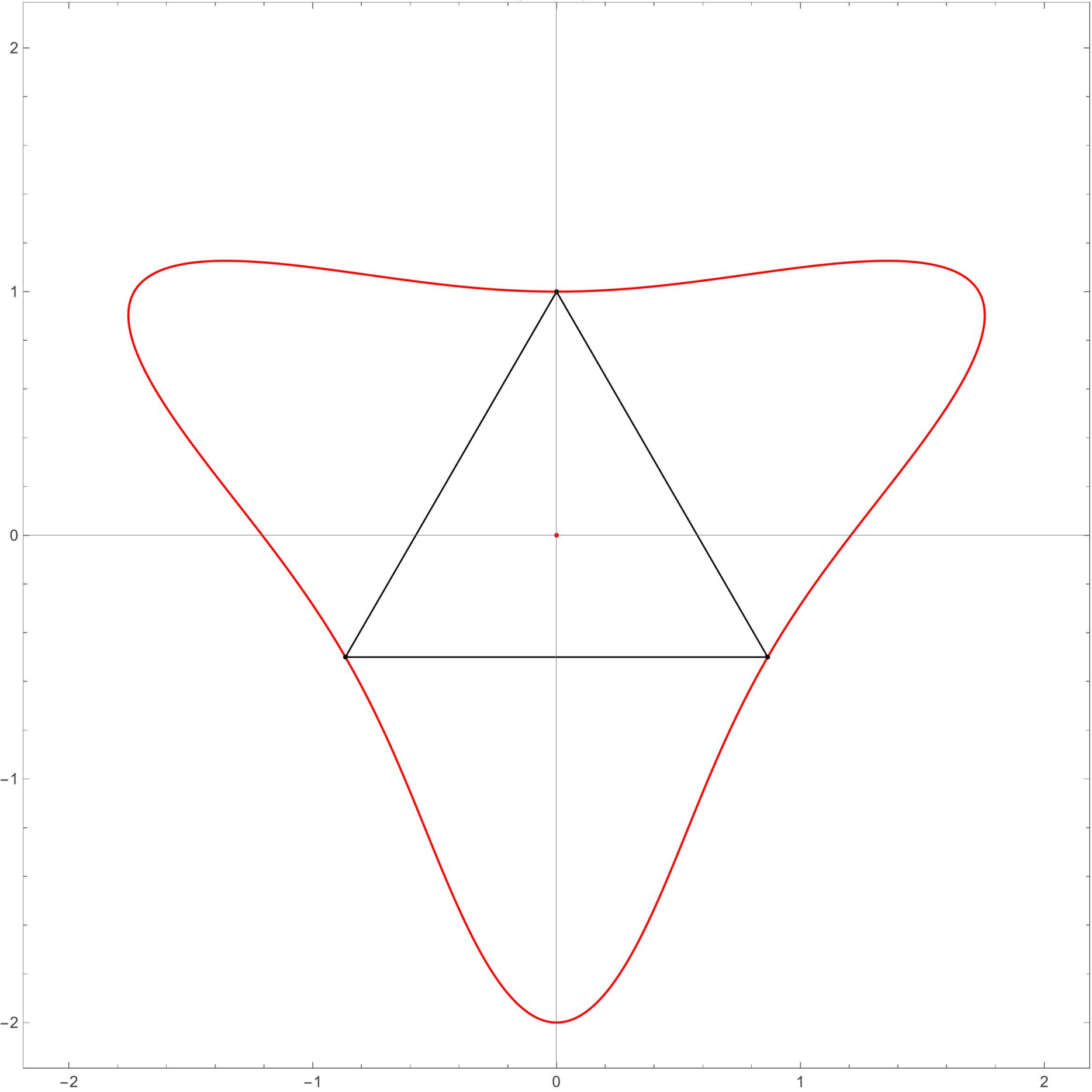
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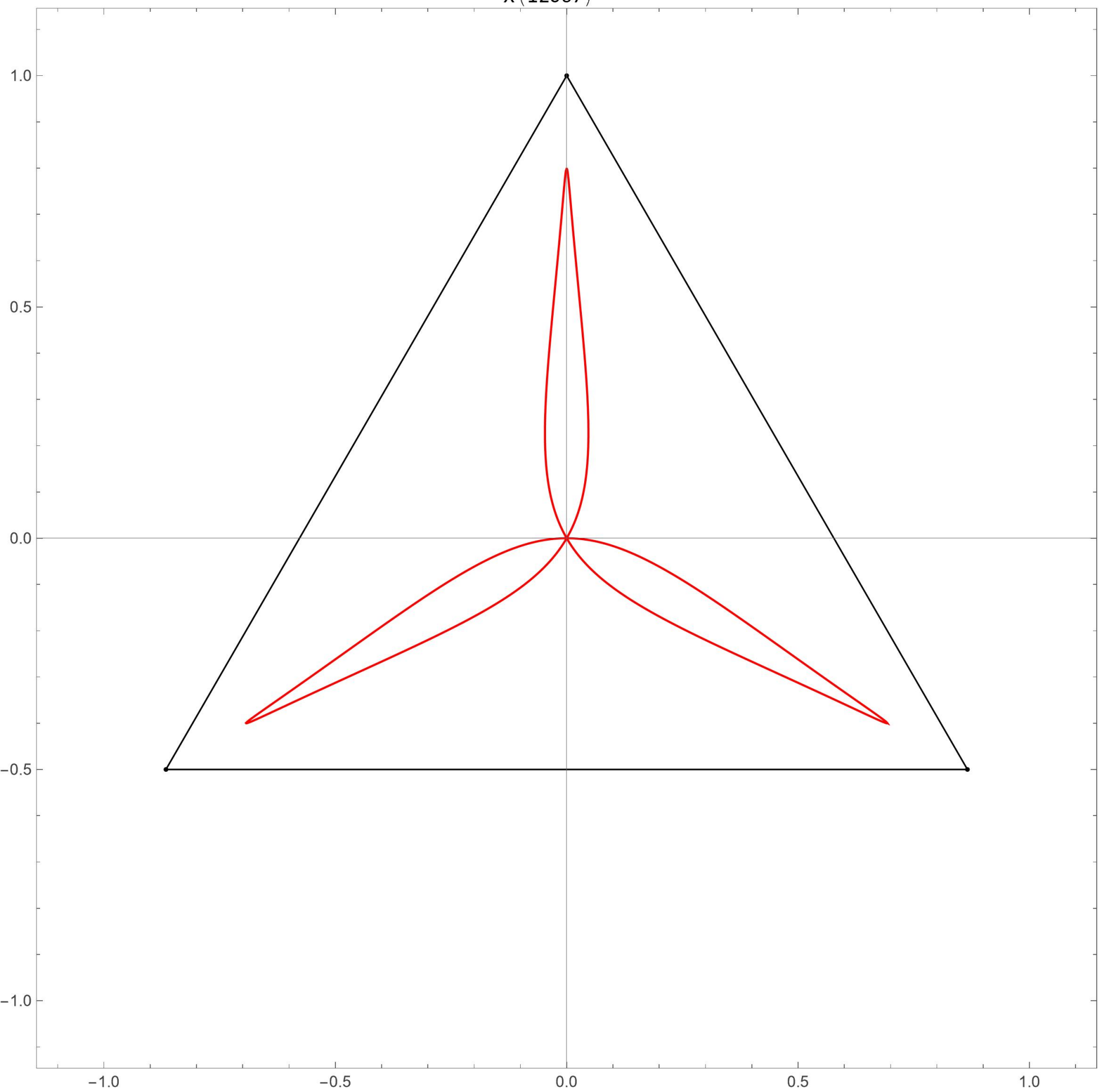
X (12065)



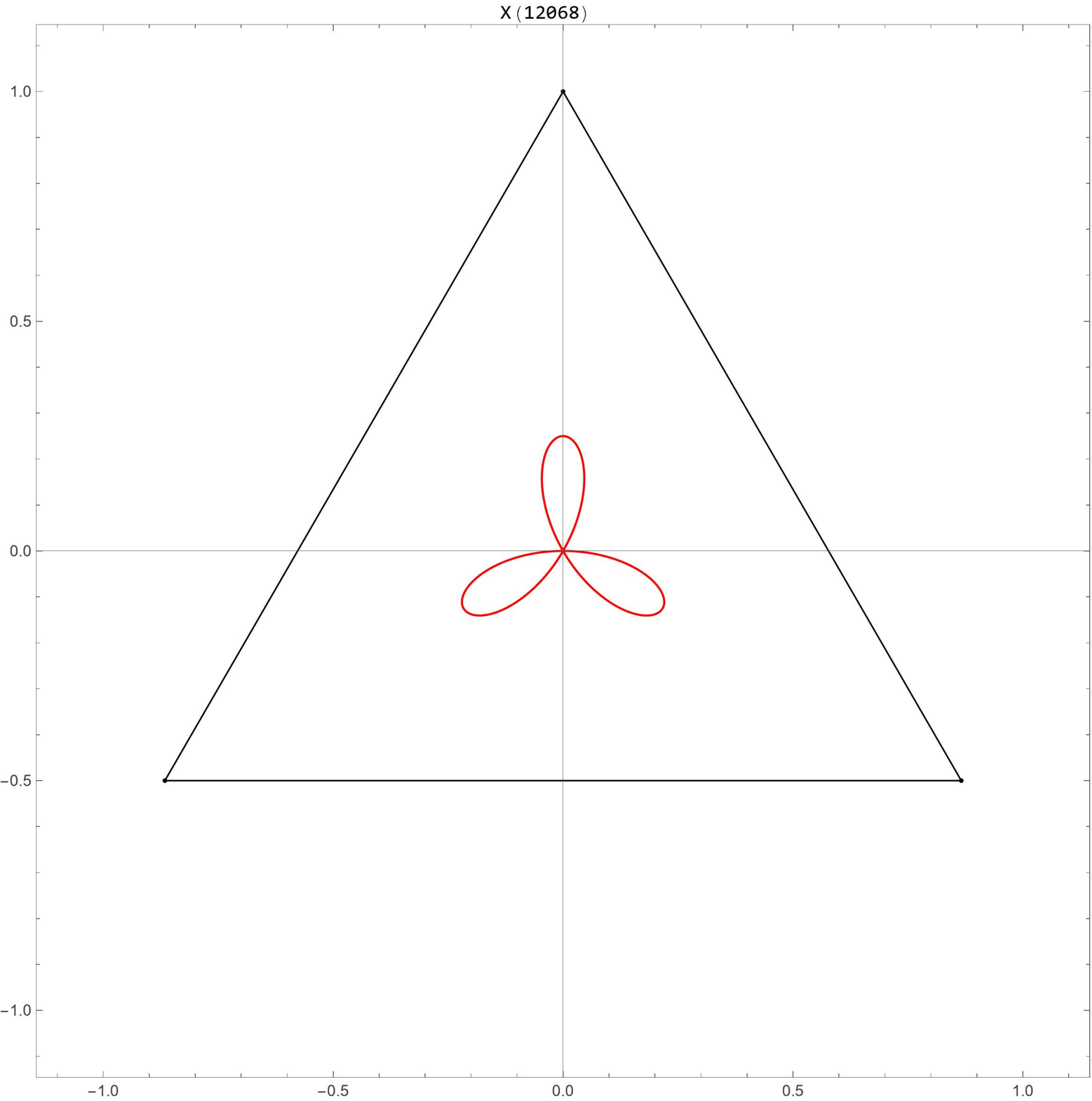
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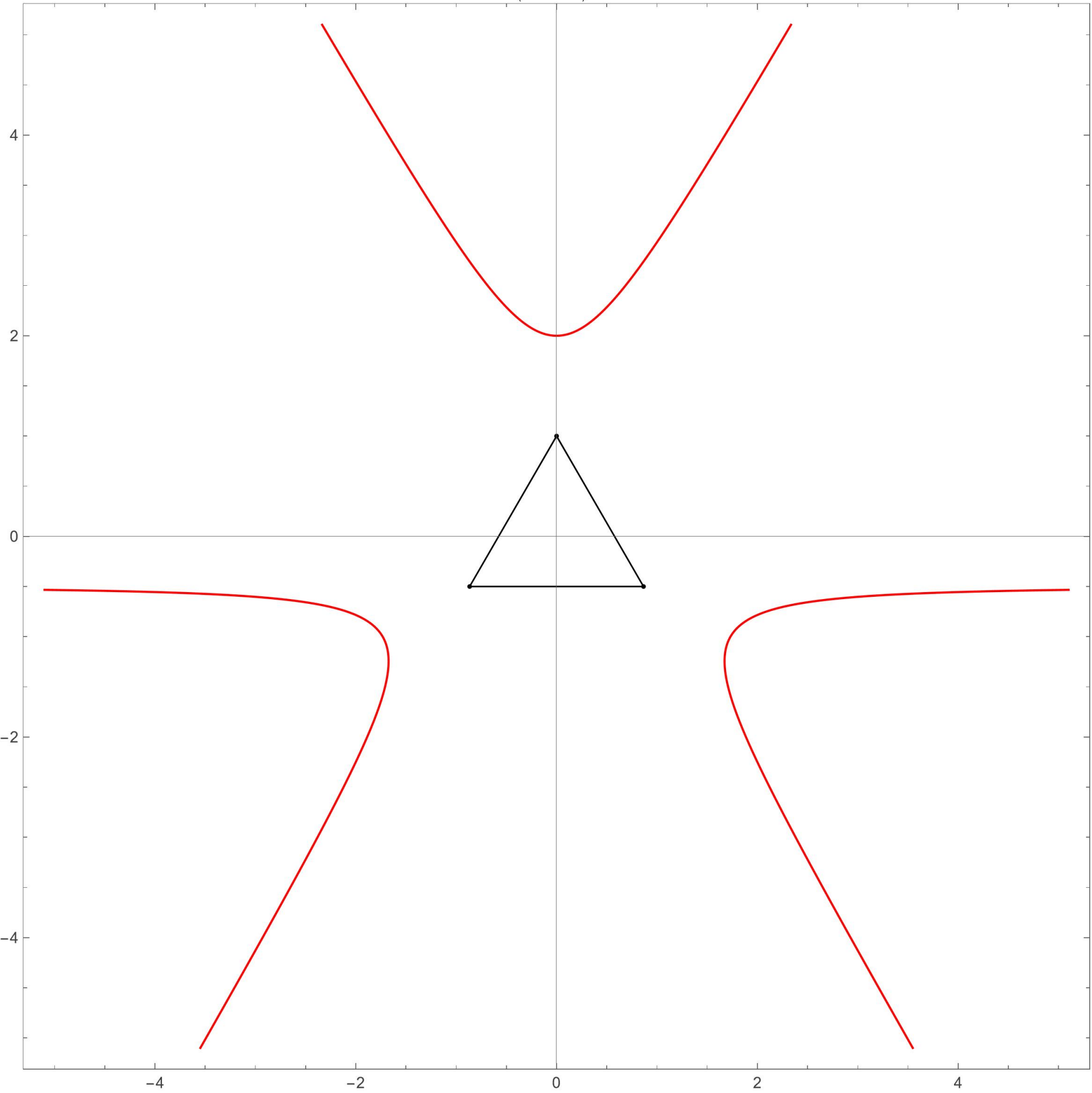
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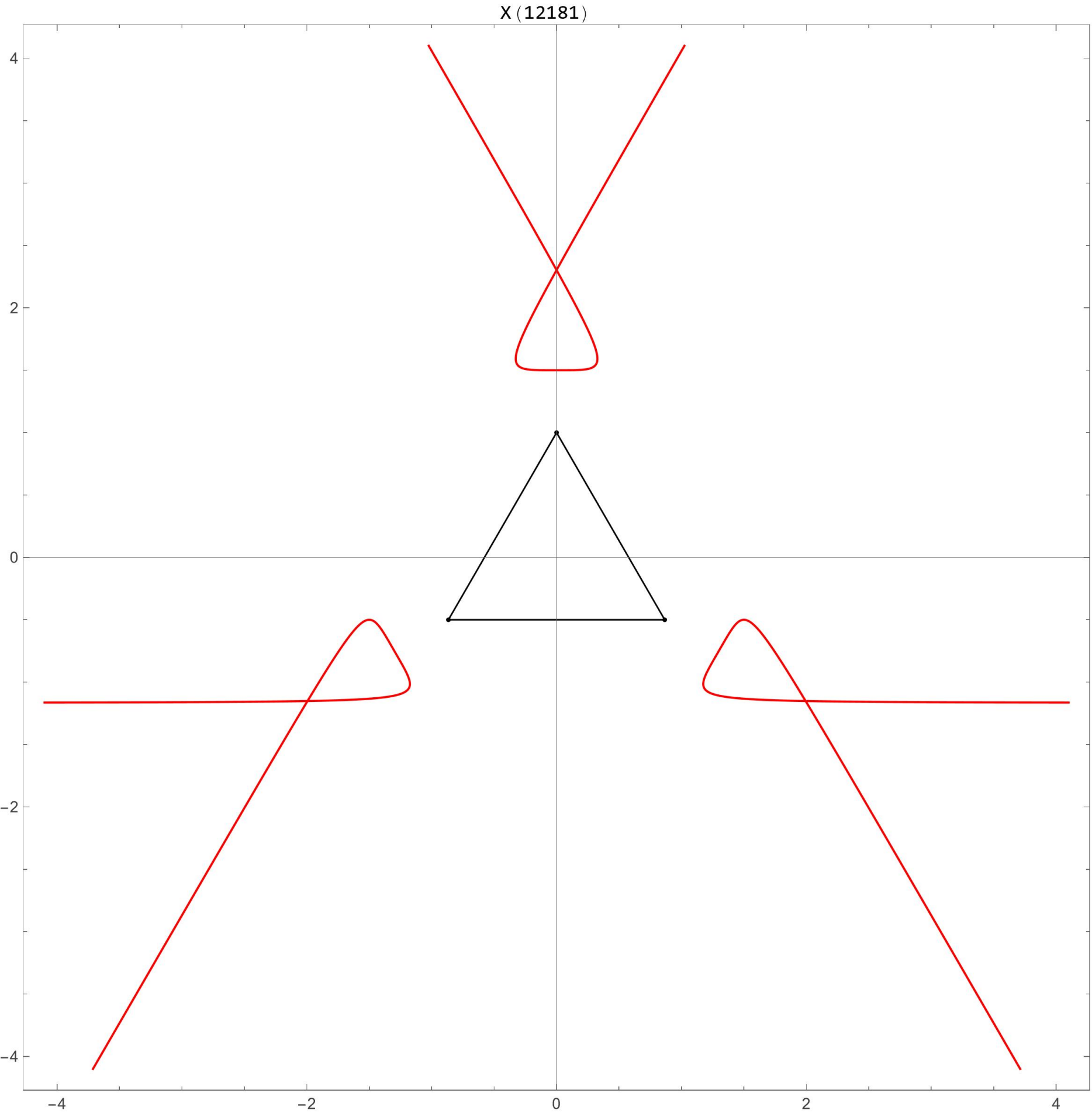
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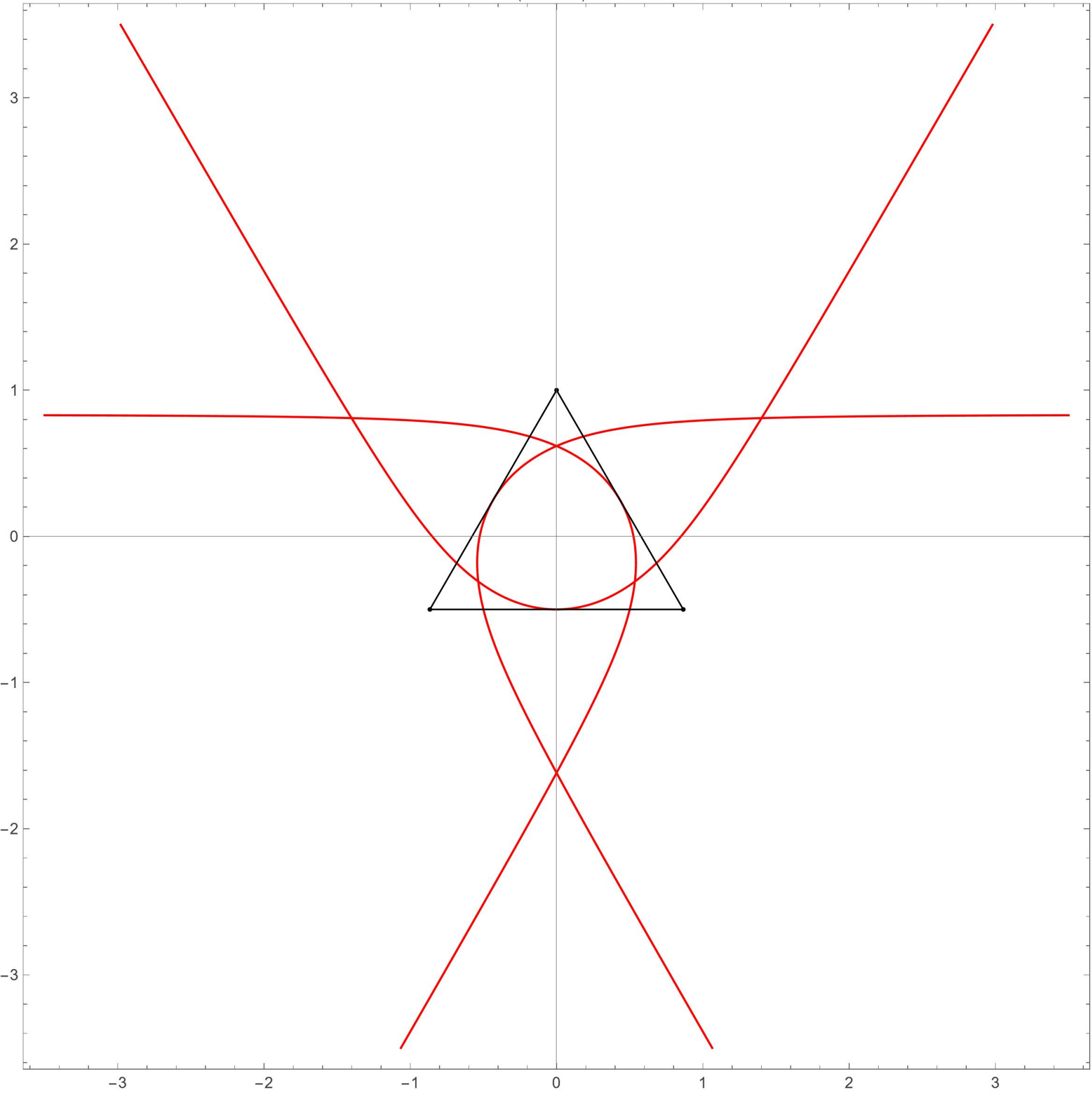
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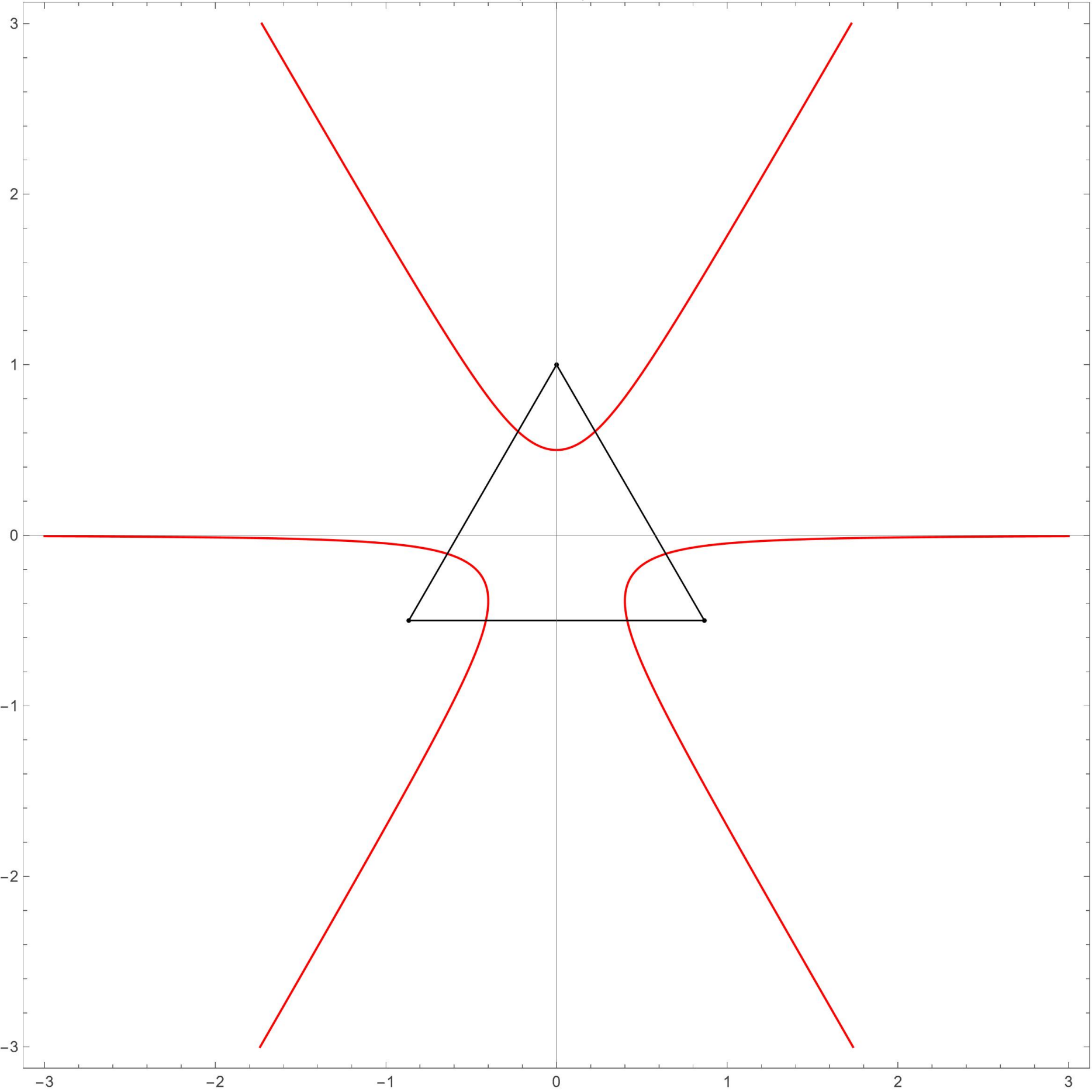
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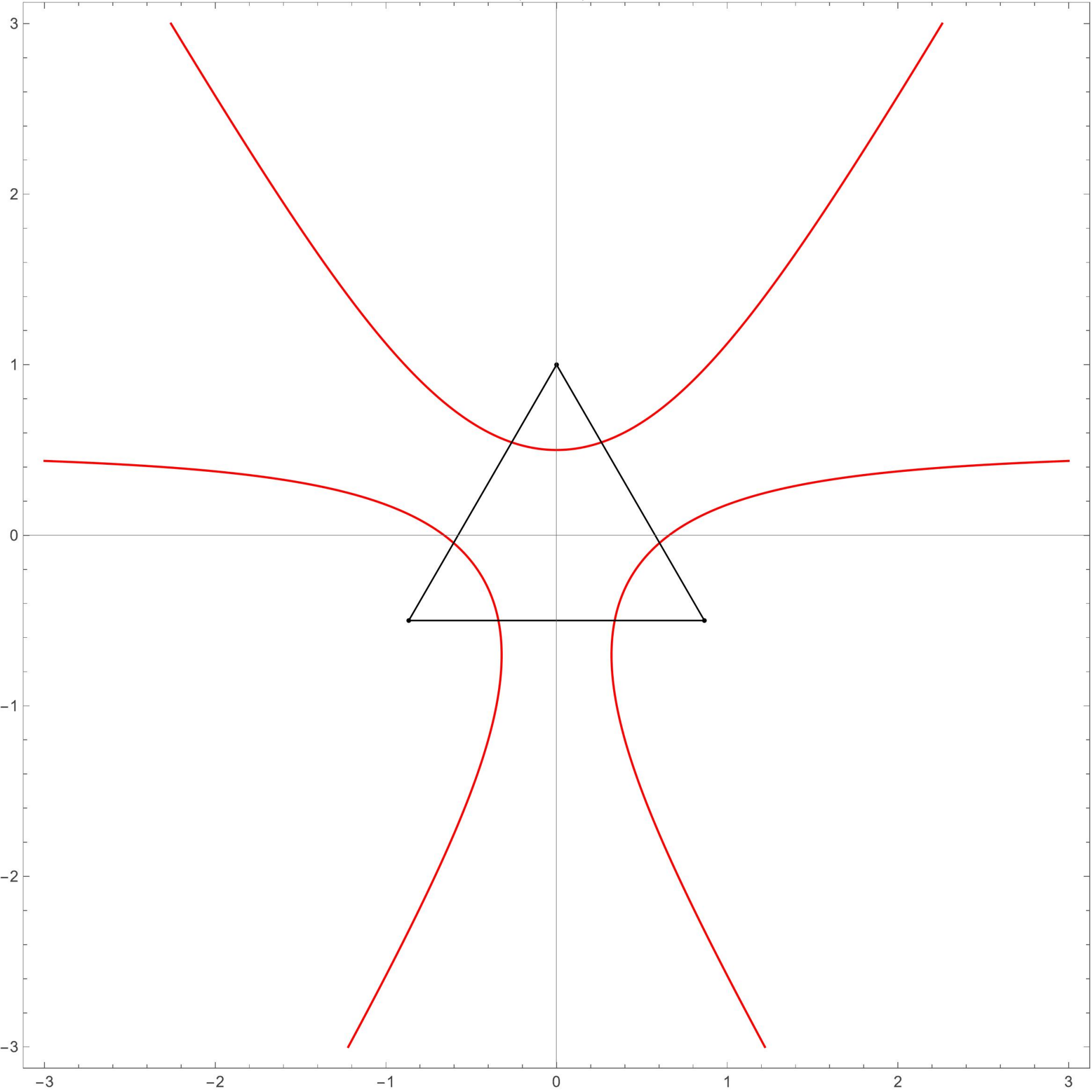
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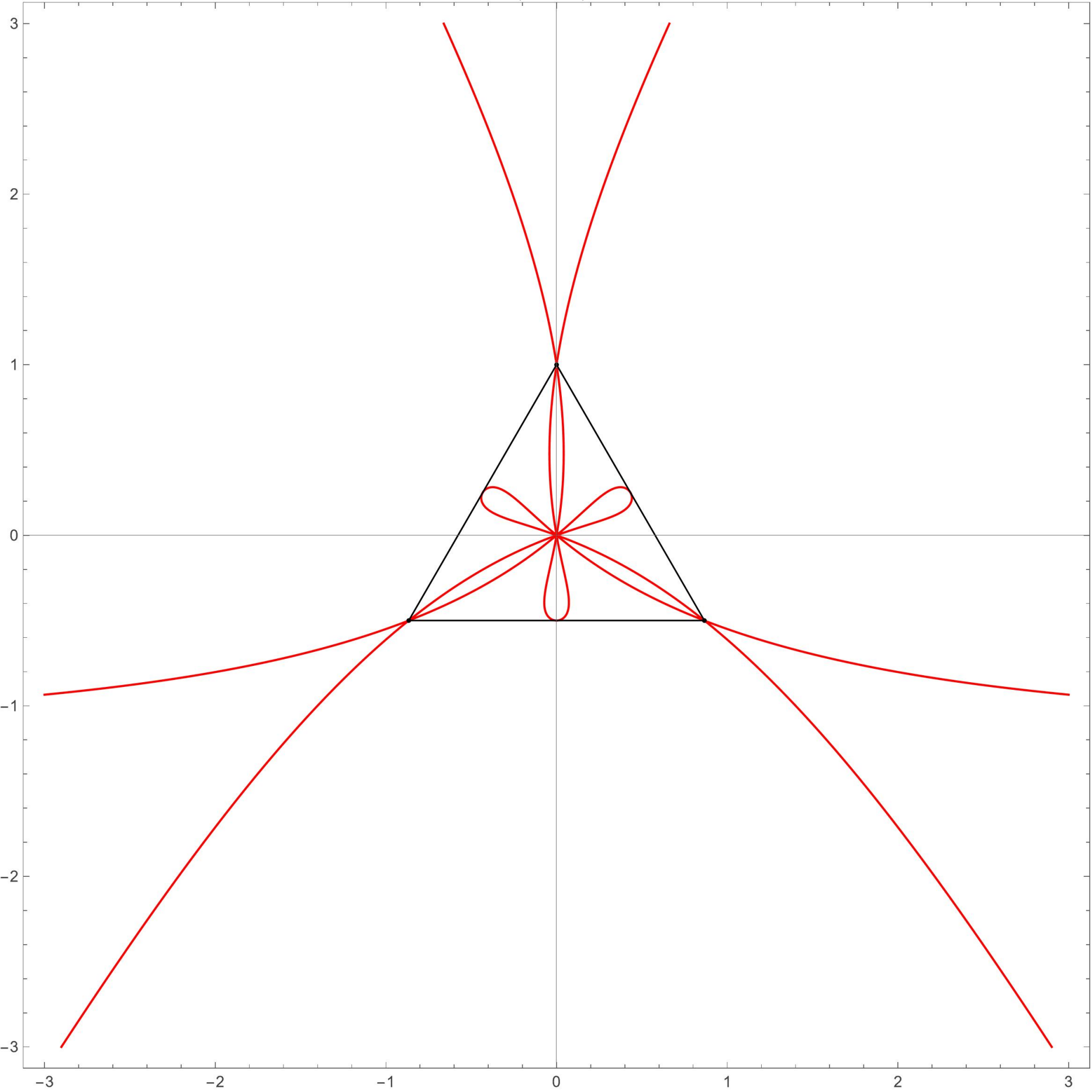
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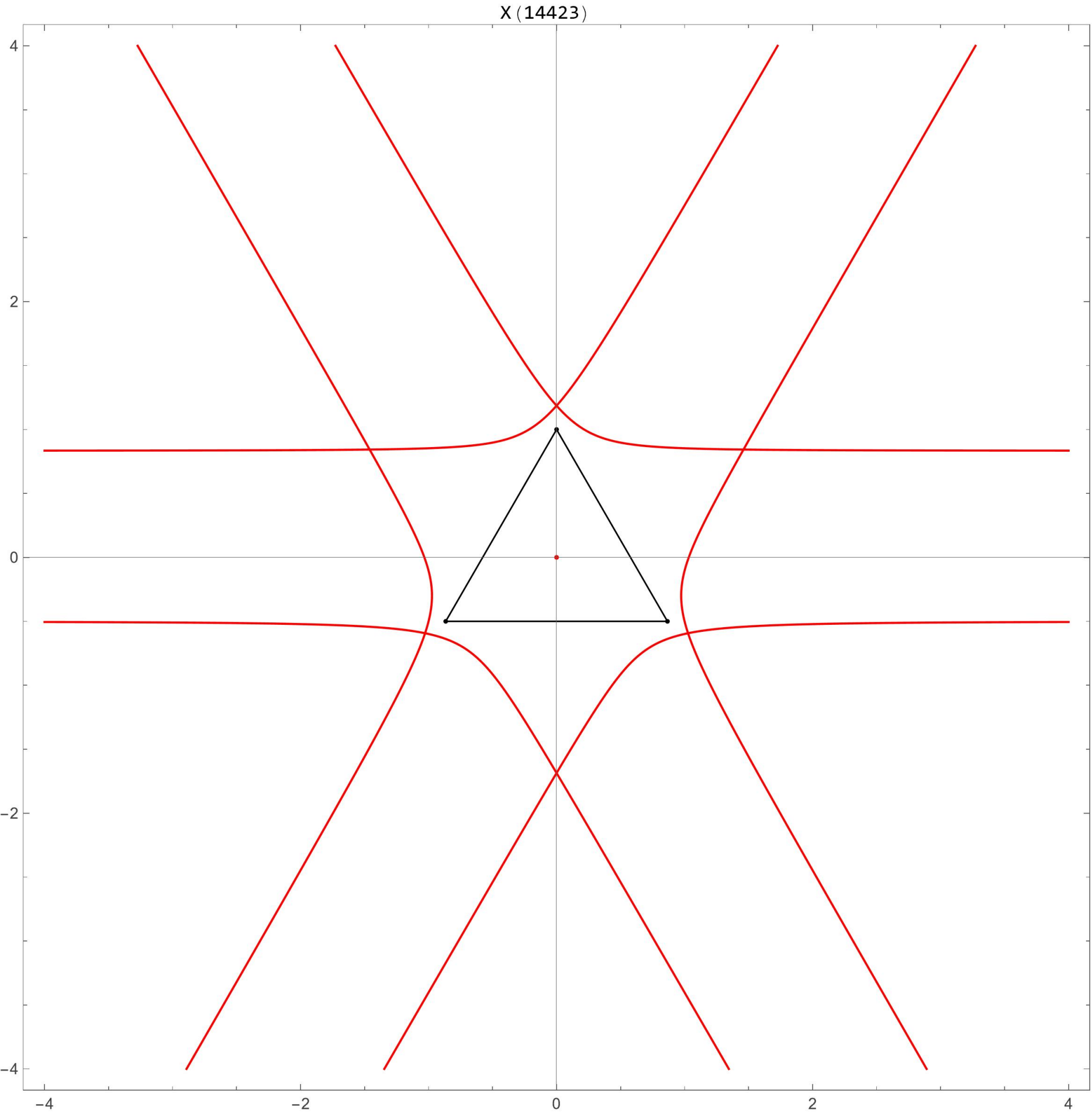
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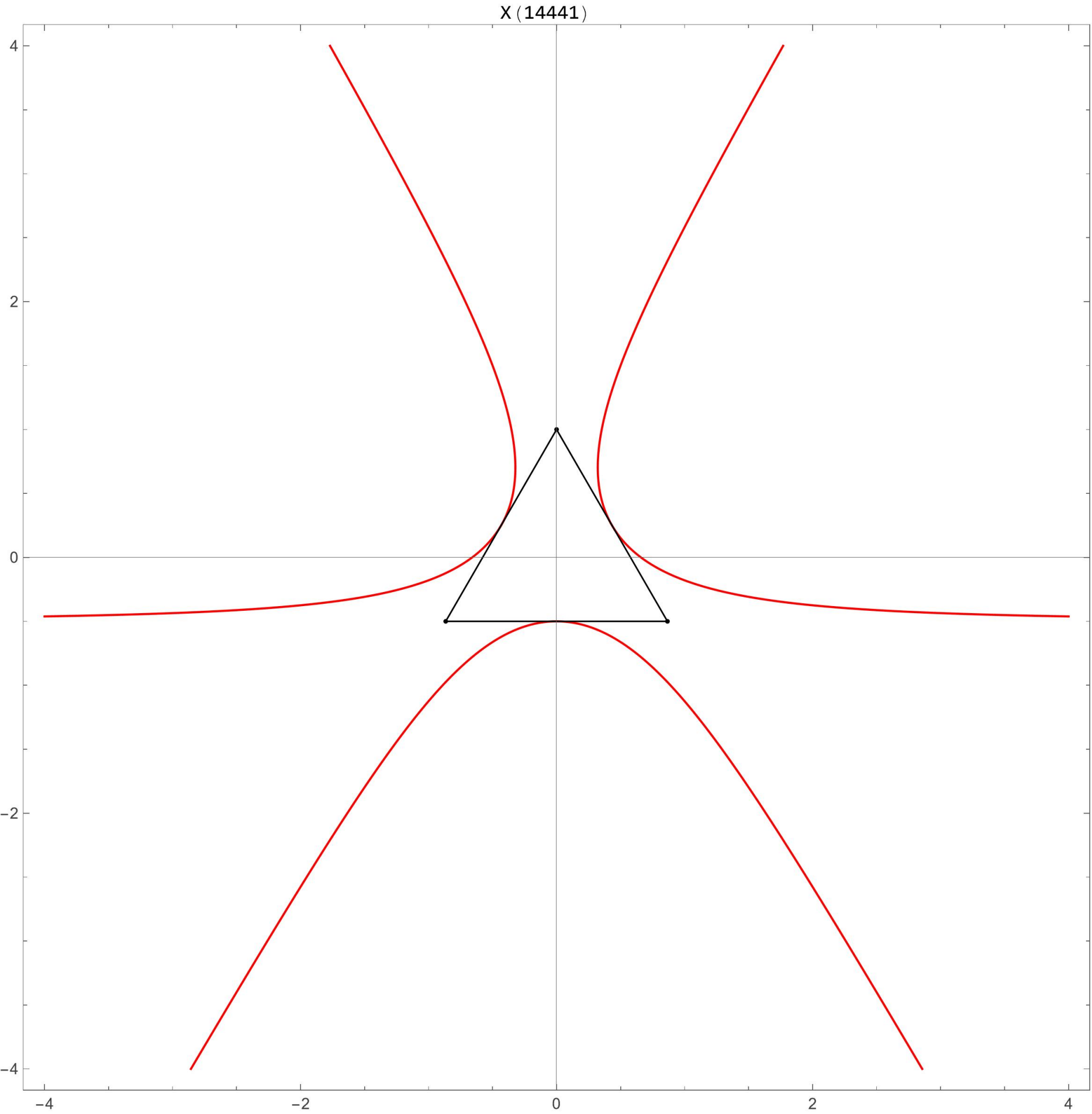
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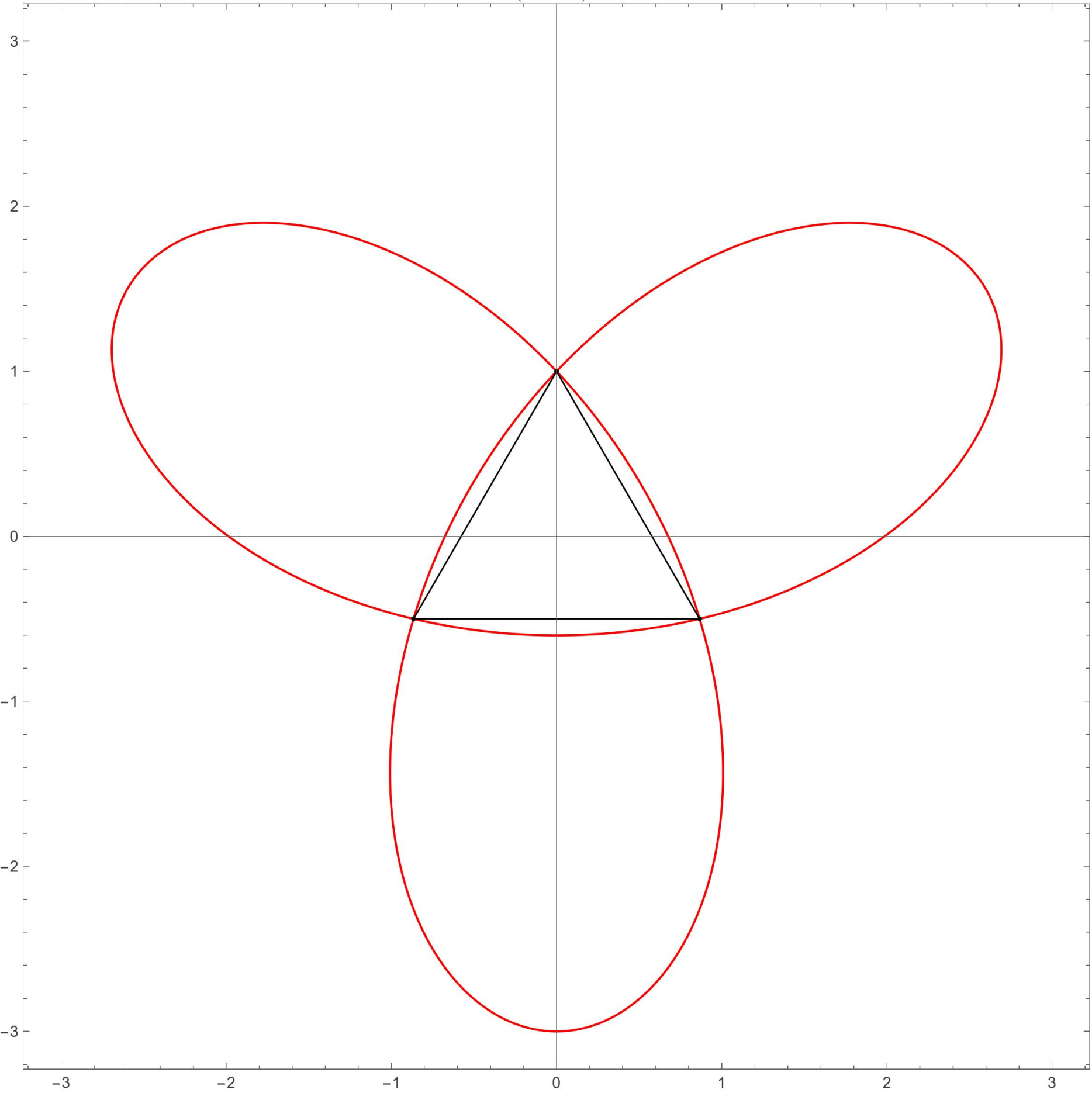
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X (14441)



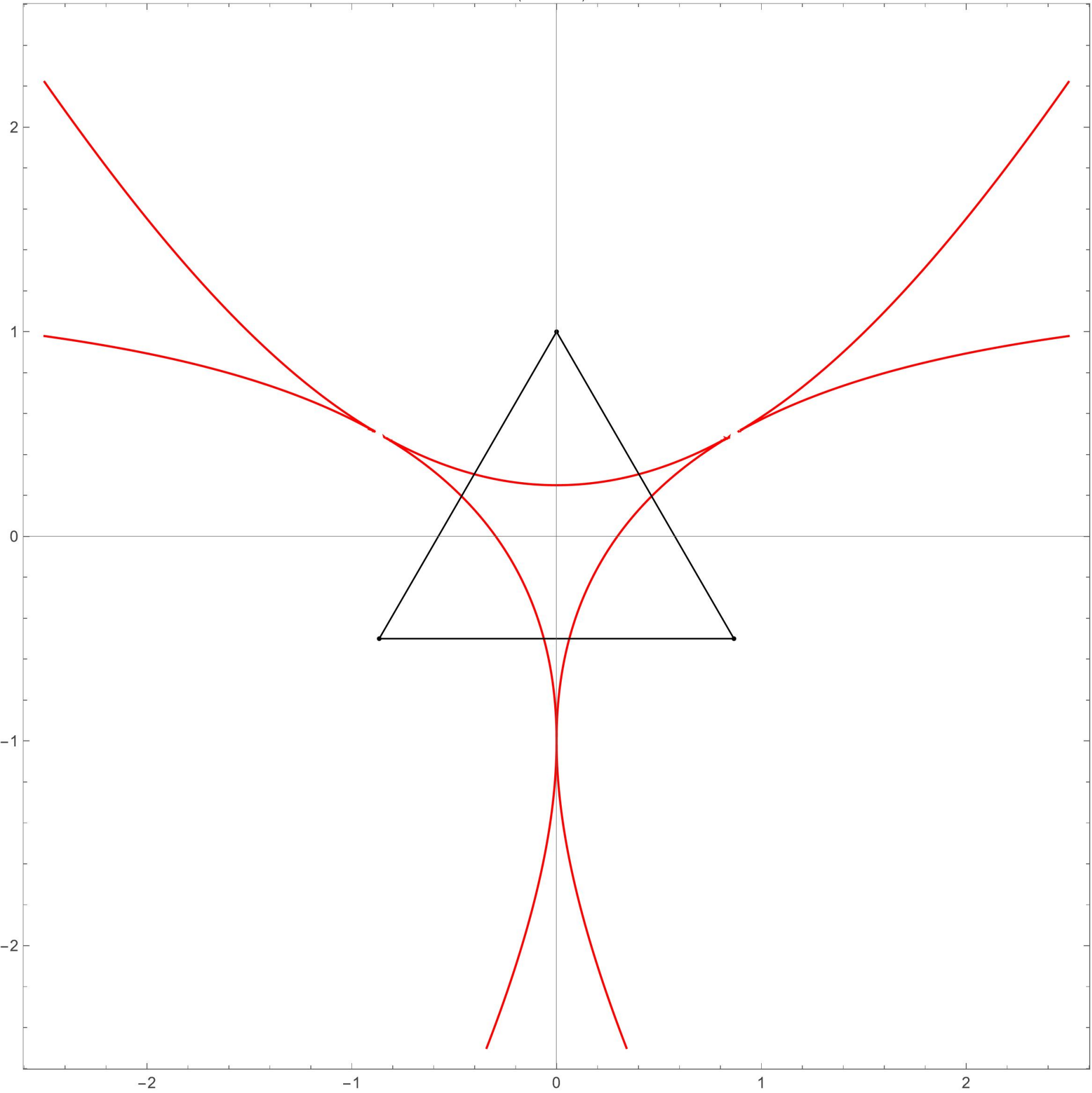
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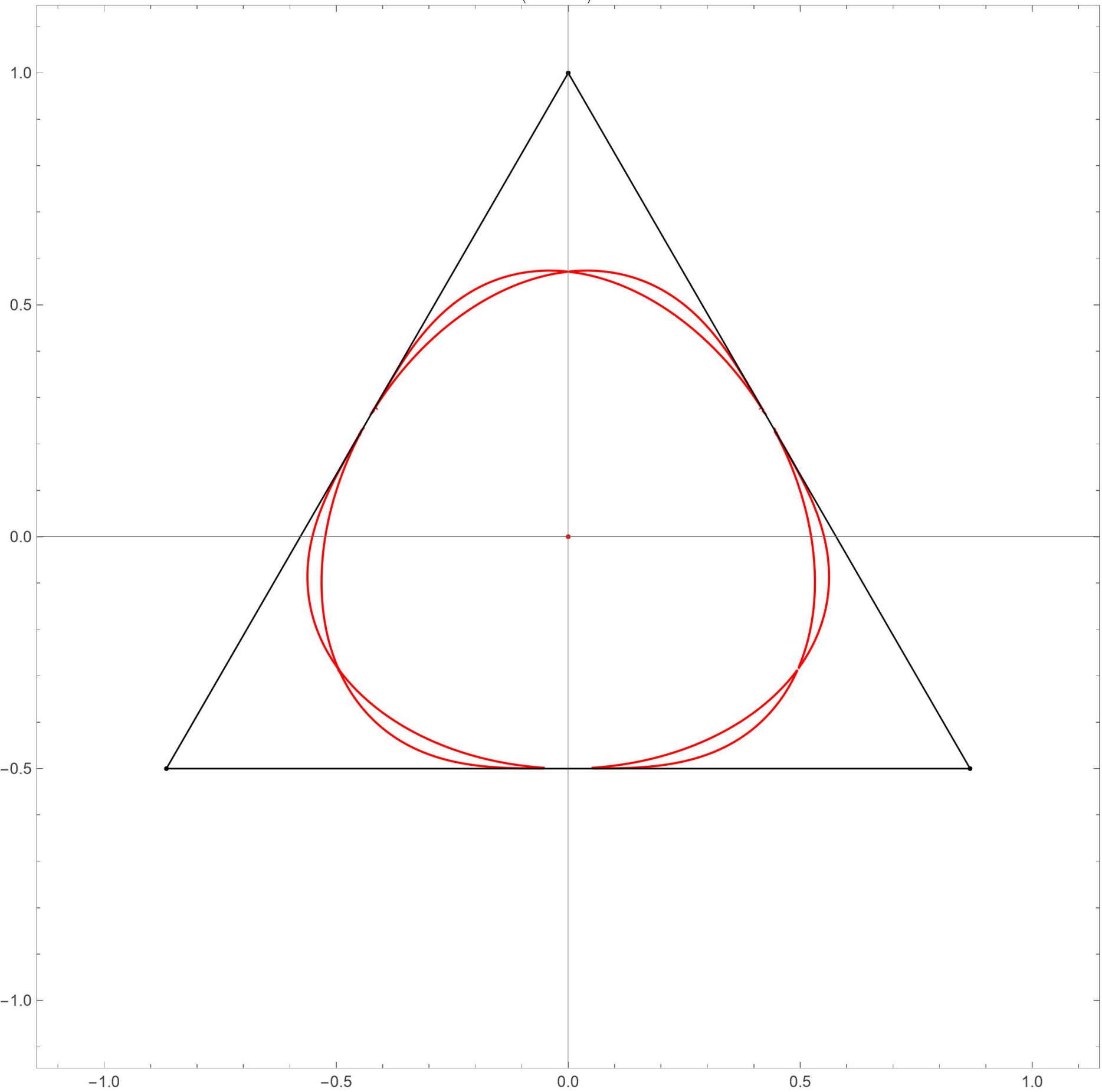
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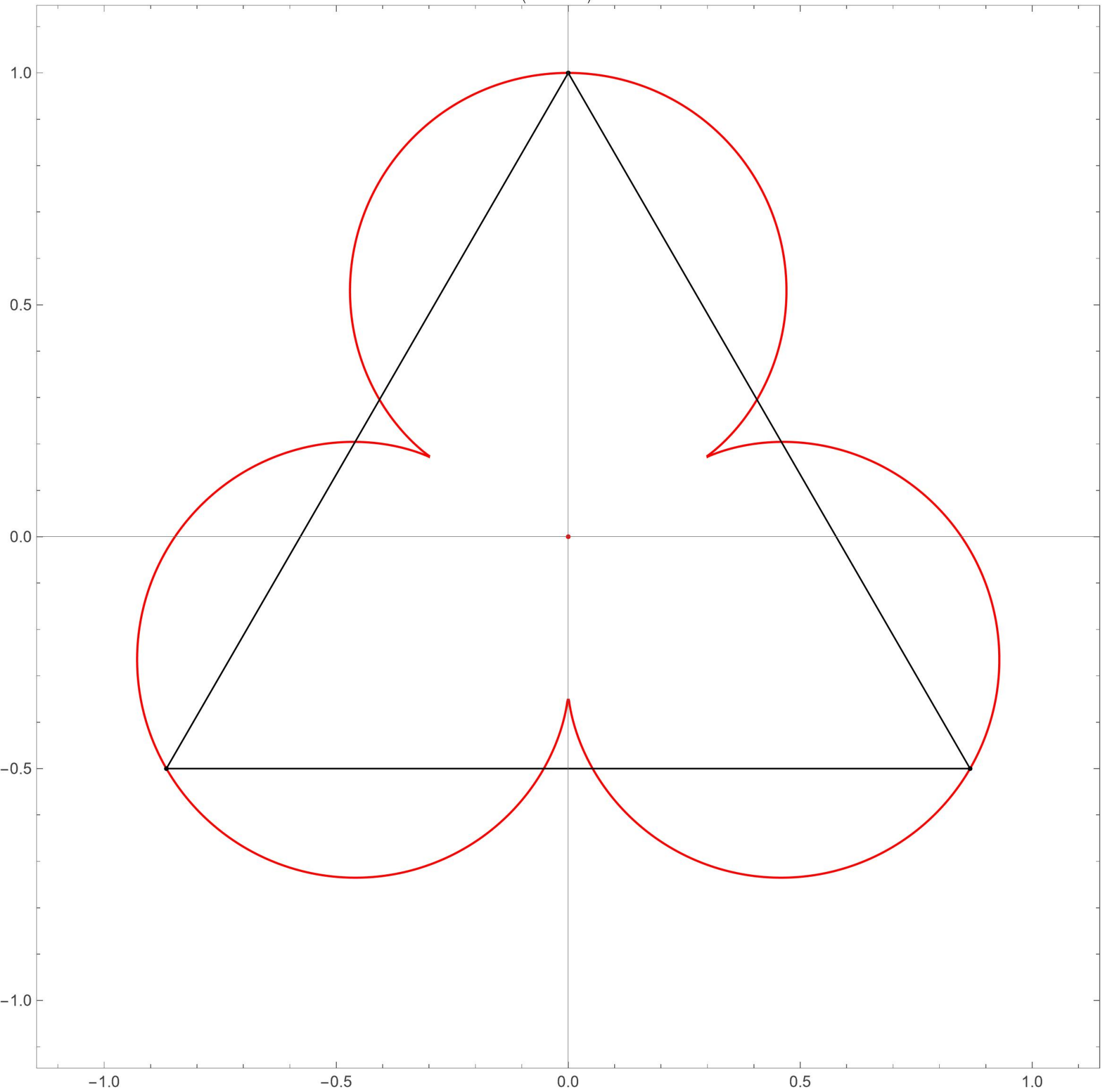
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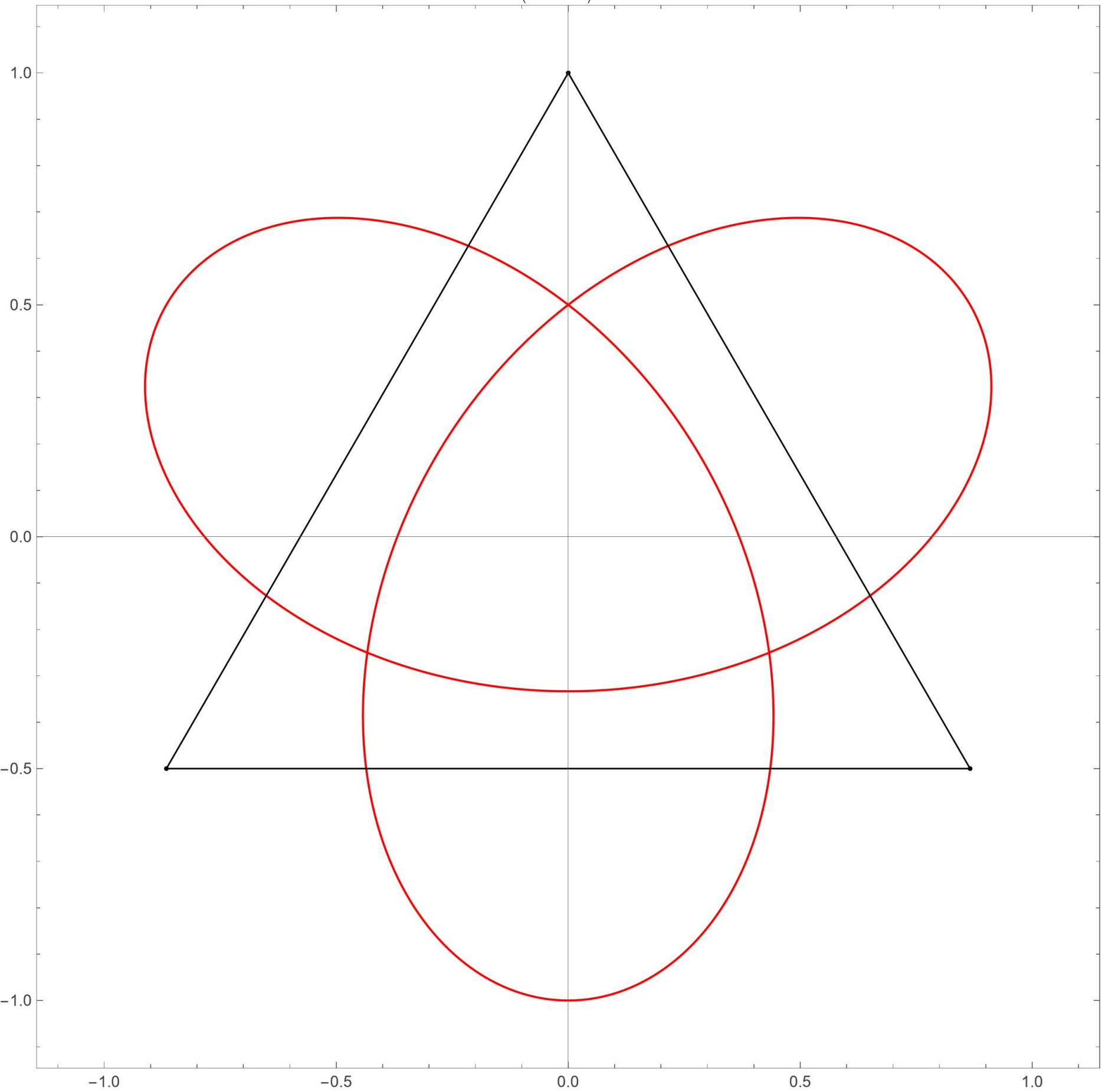
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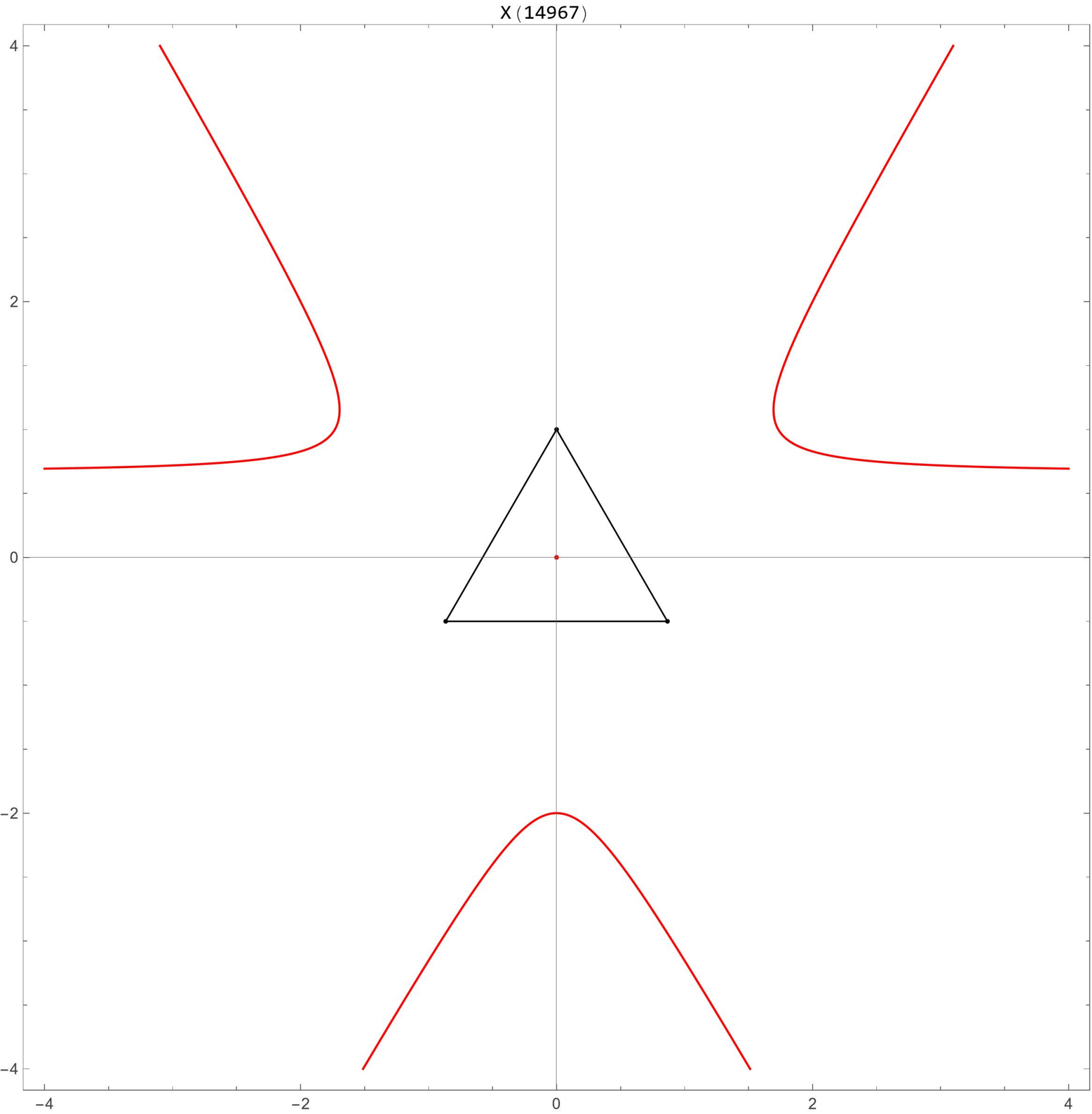
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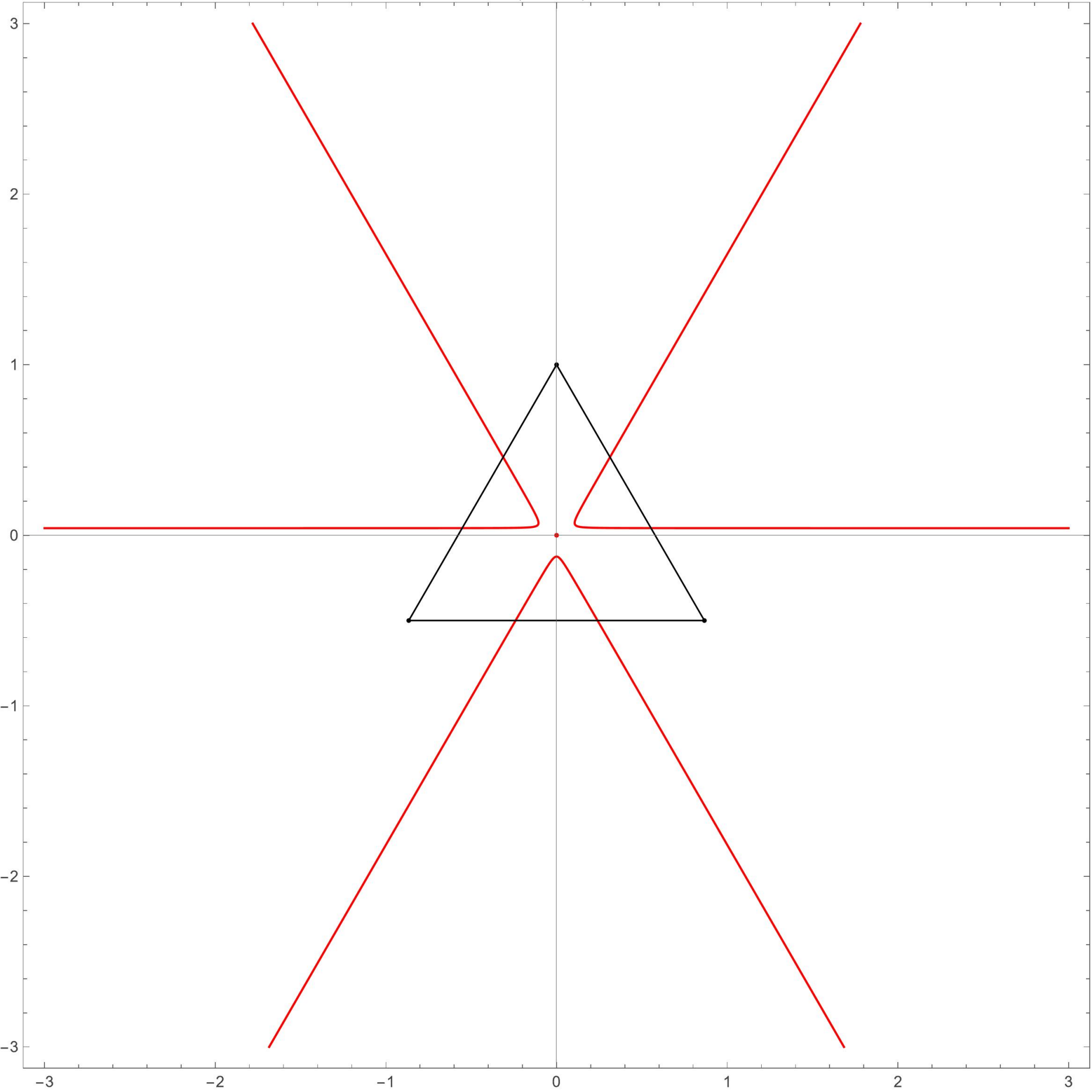
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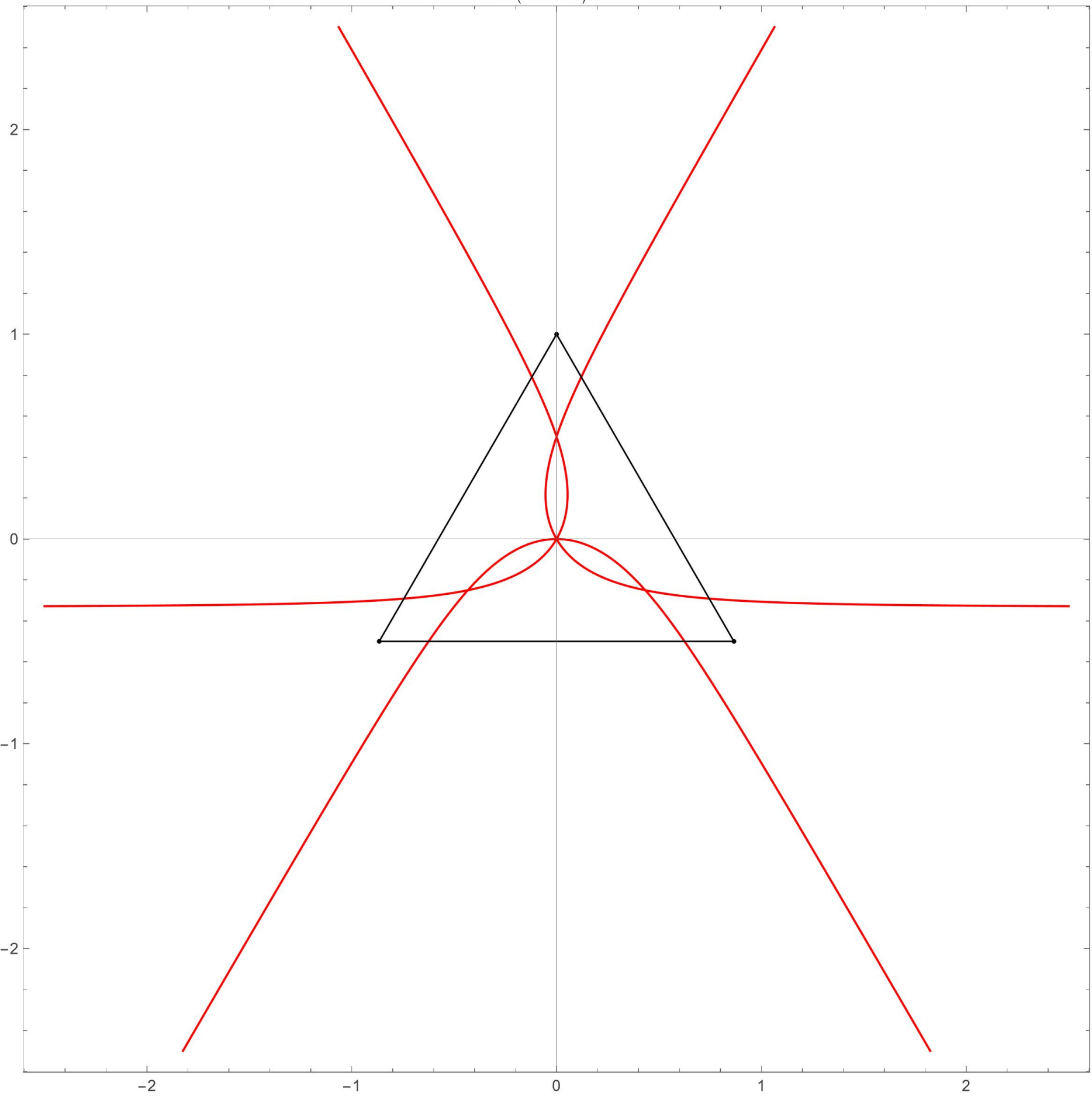
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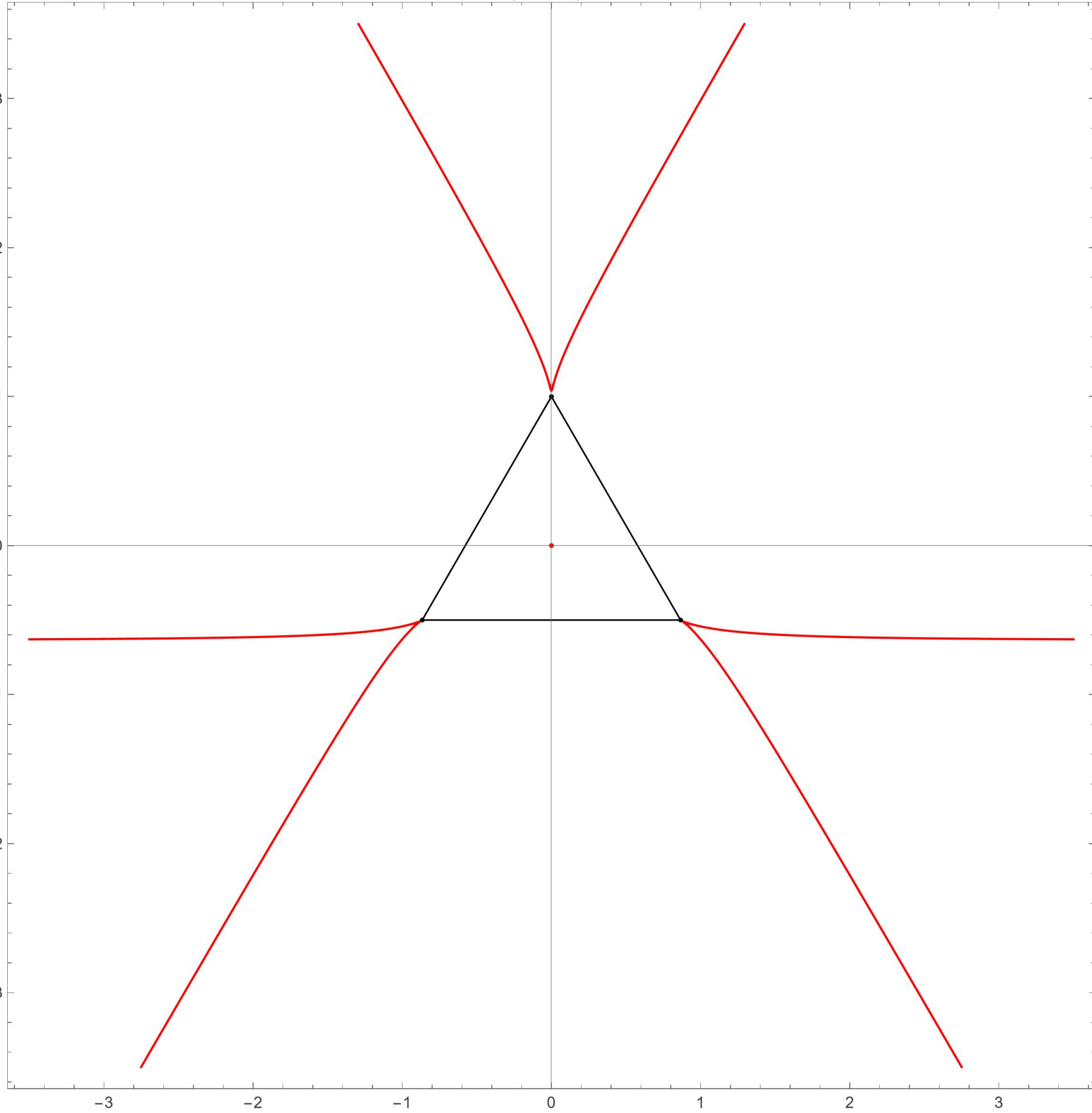
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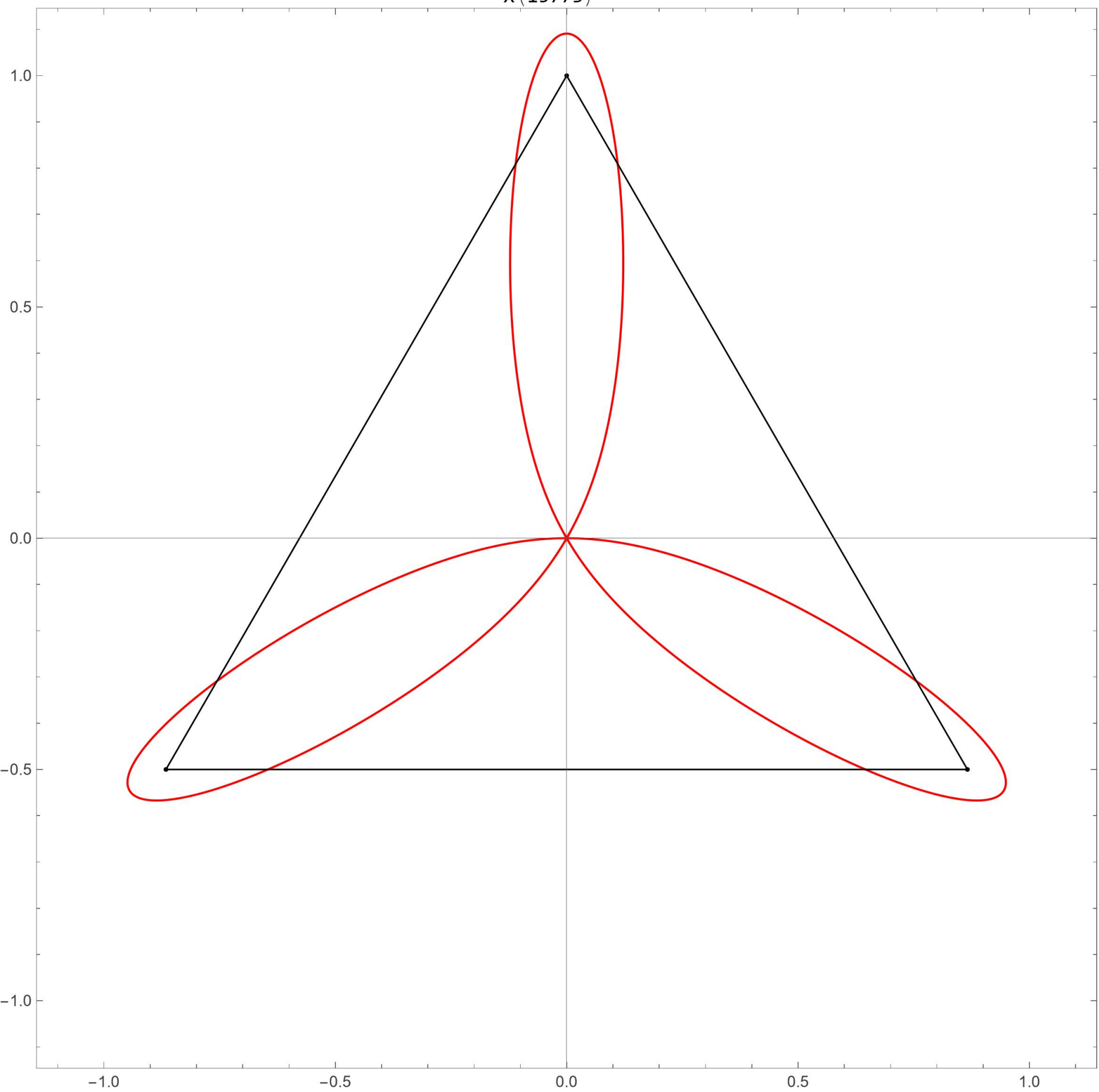
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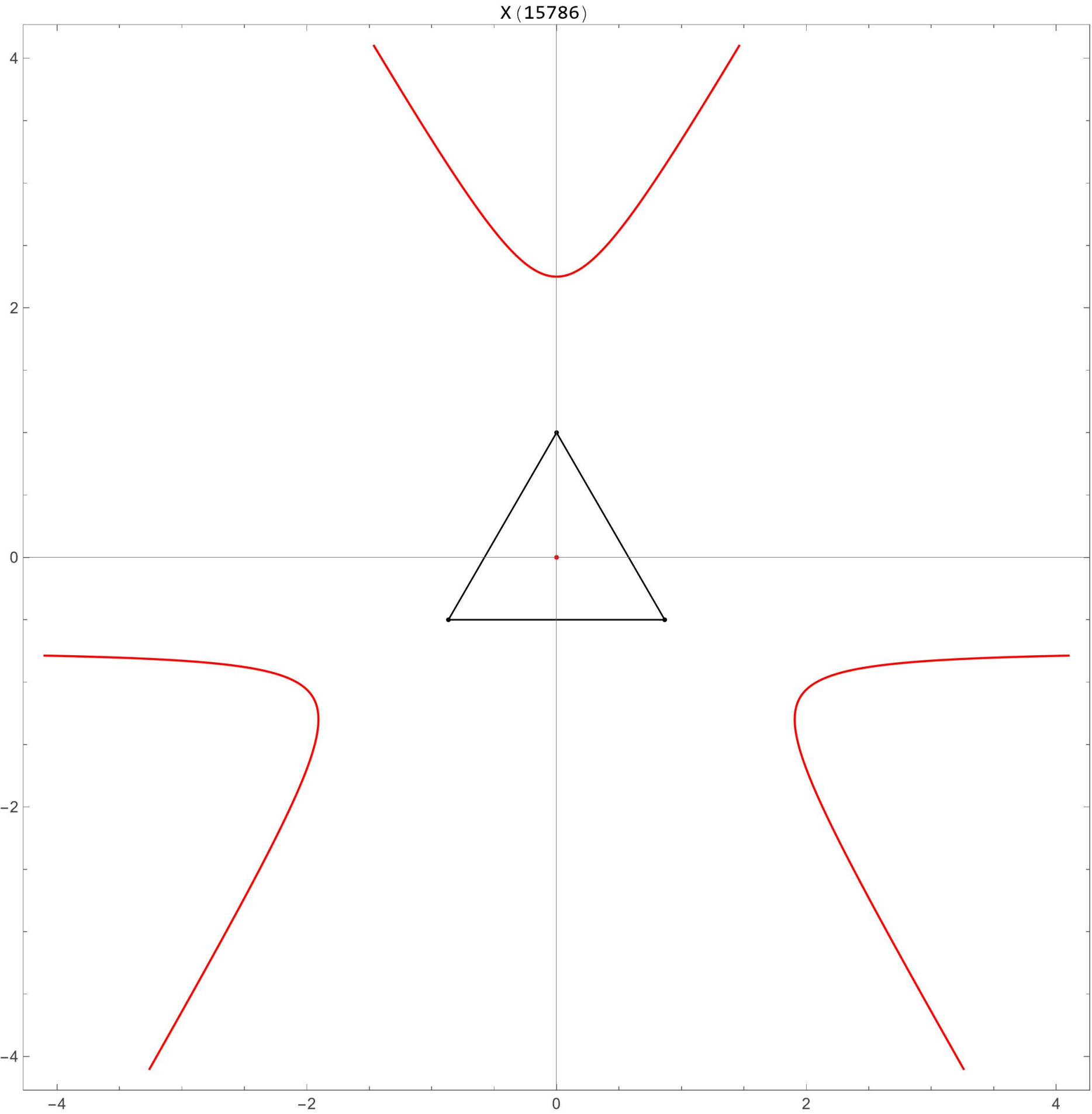
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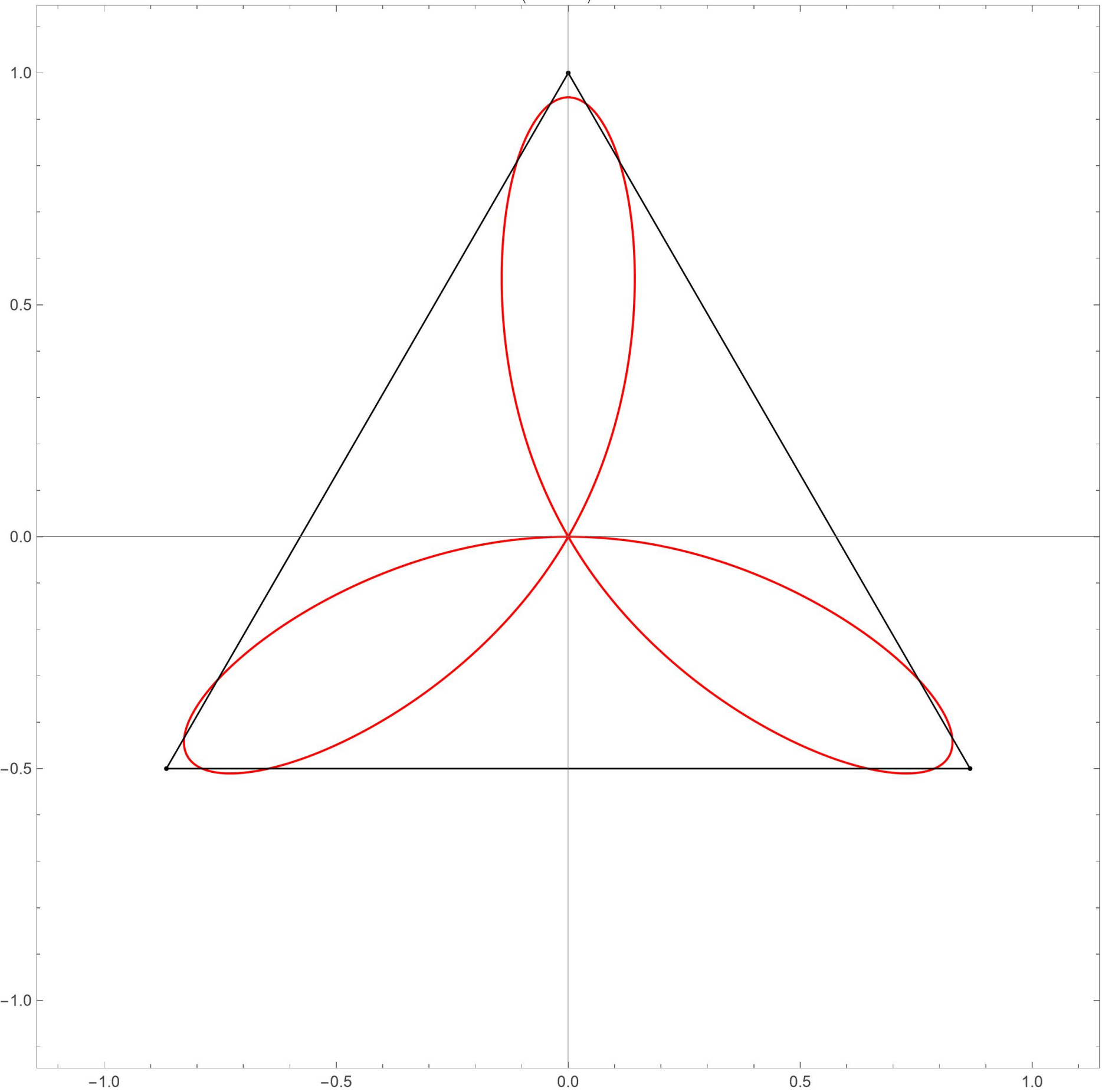
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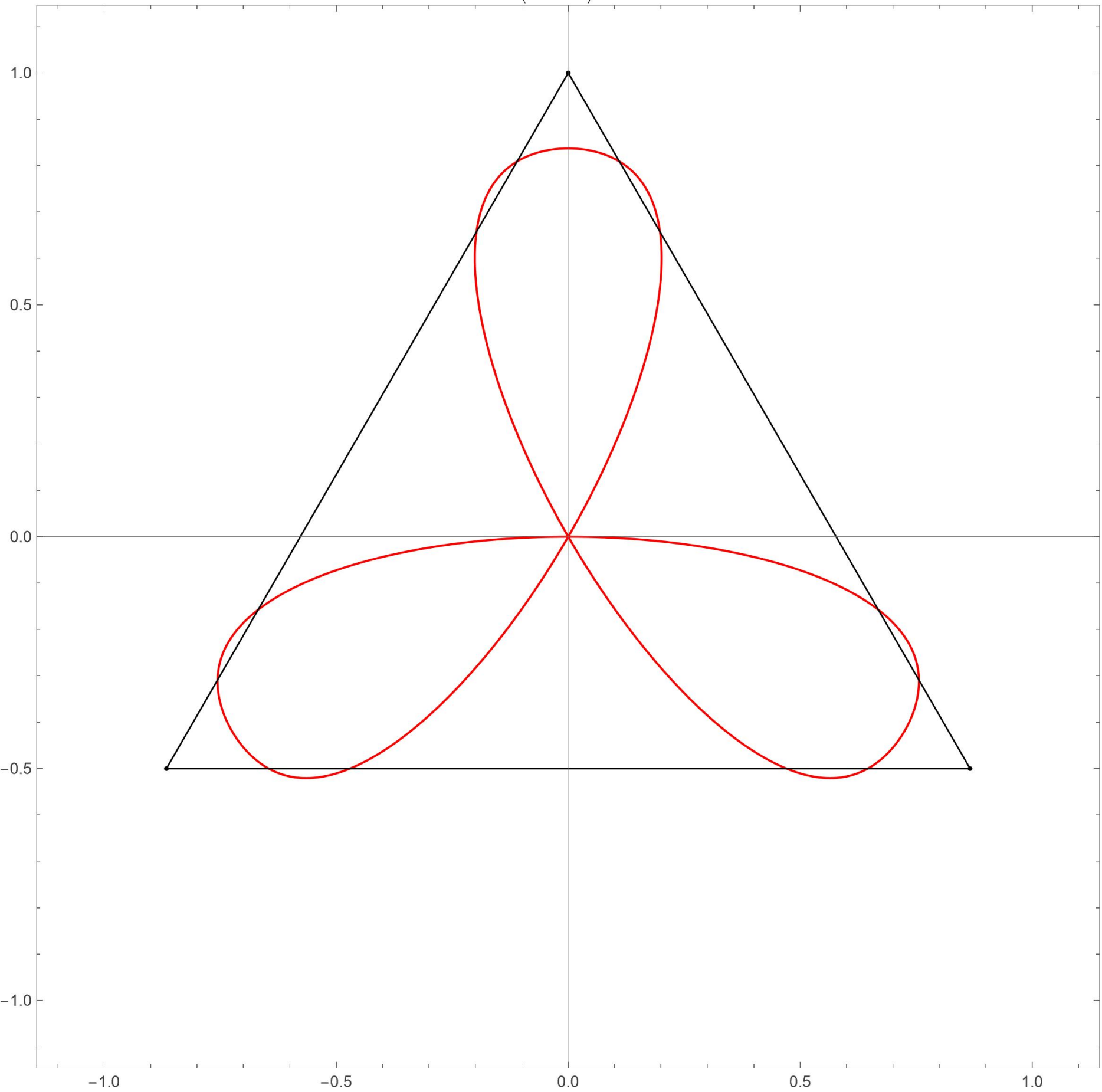
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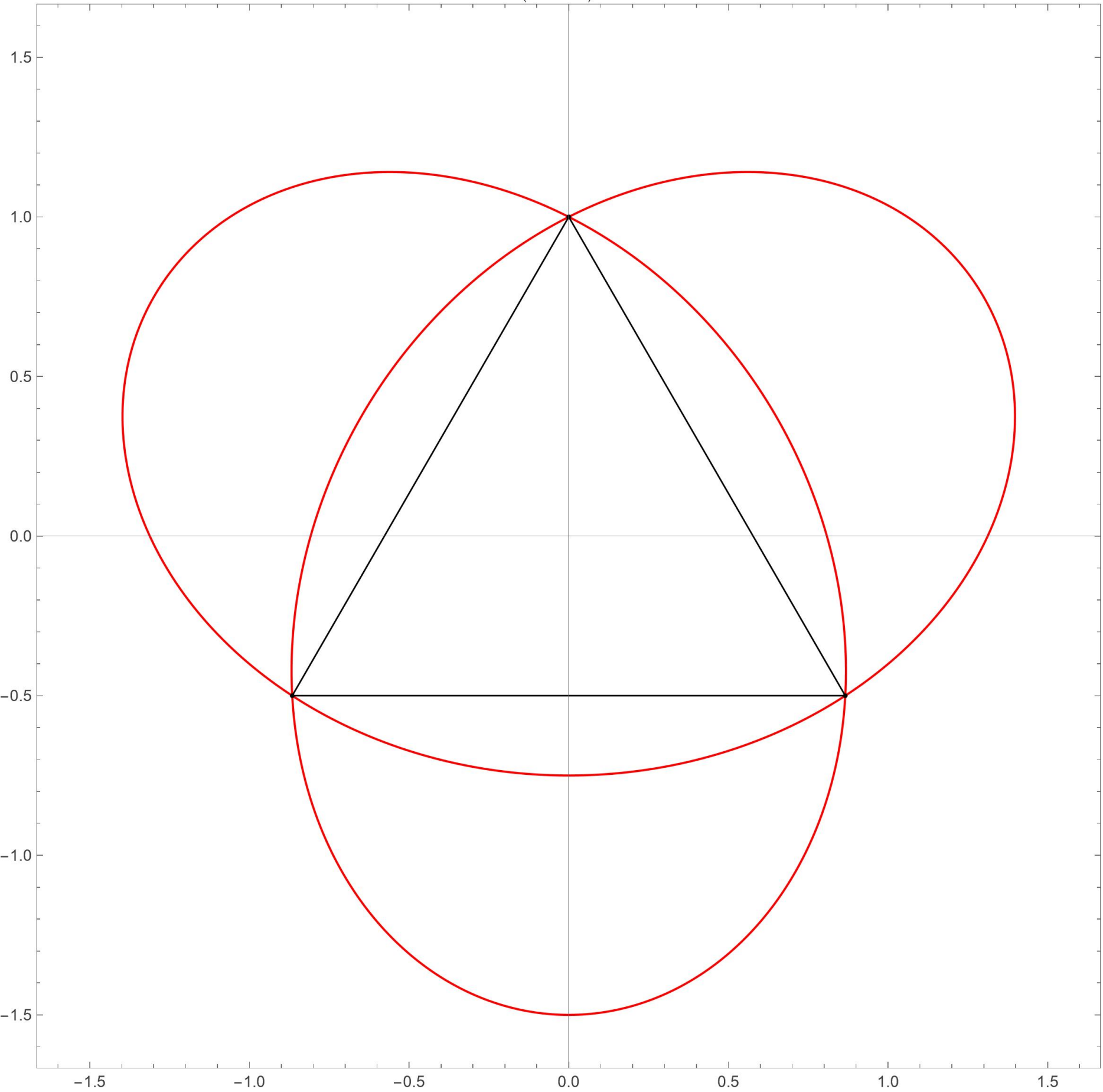
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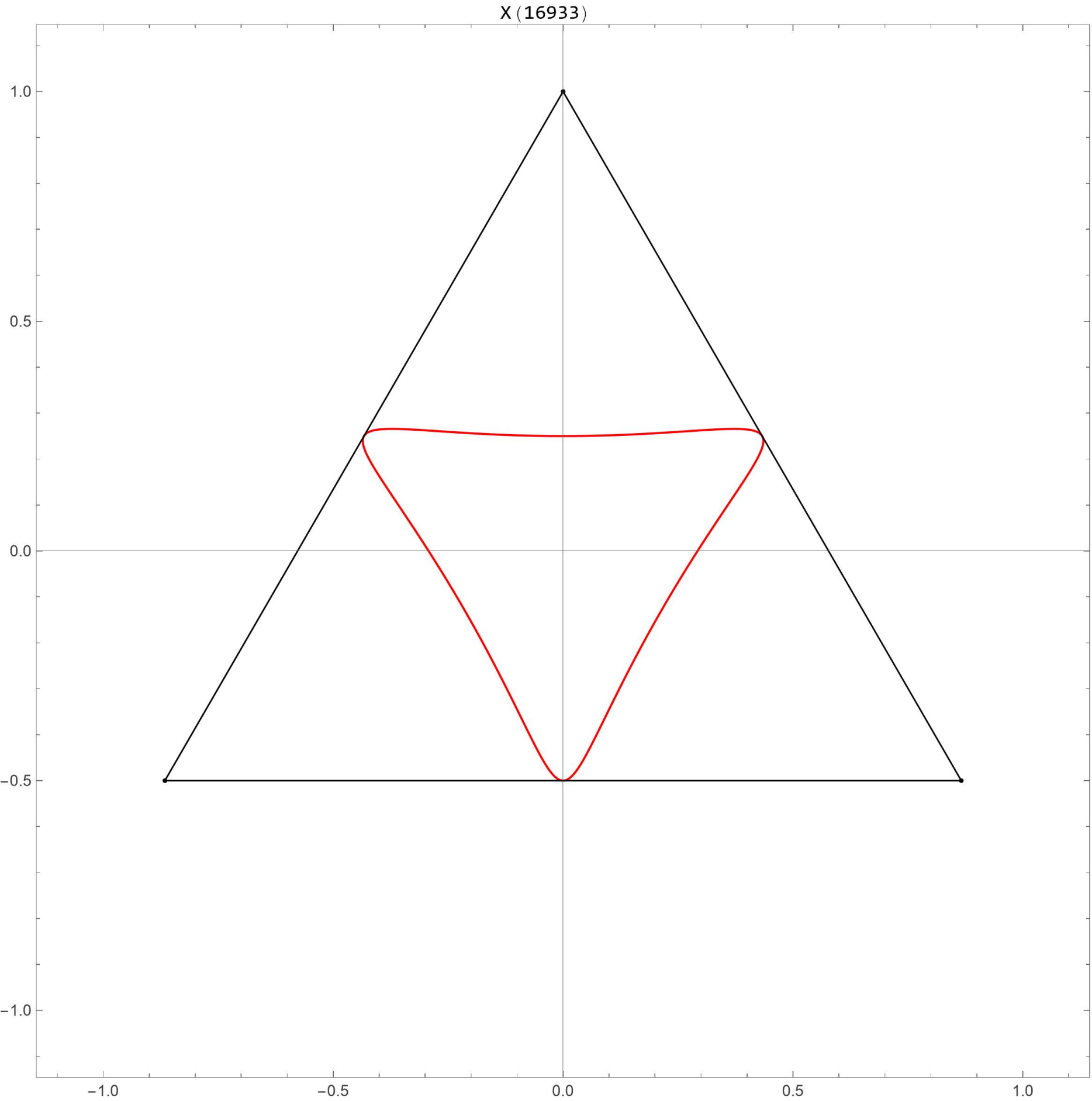
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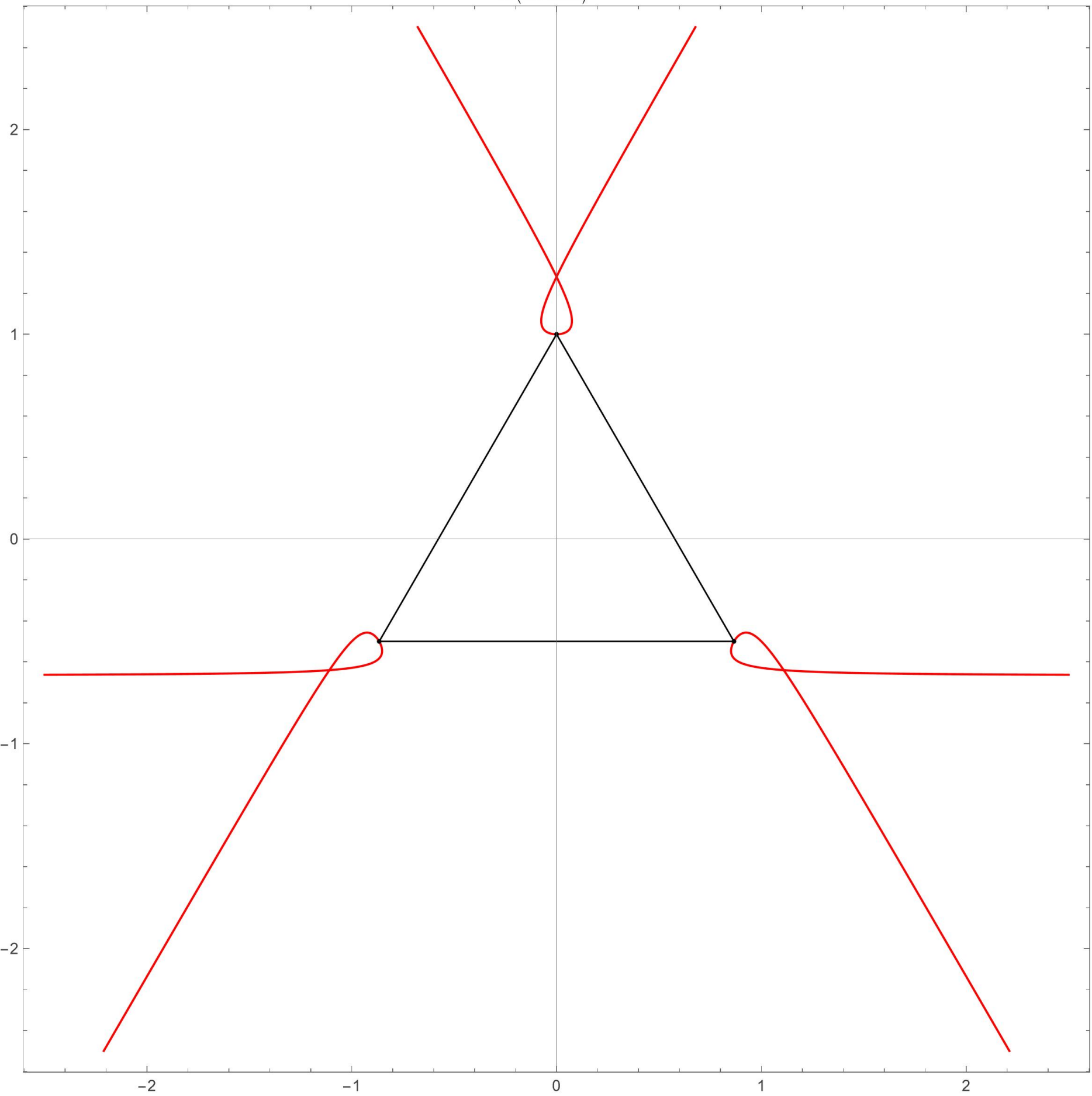
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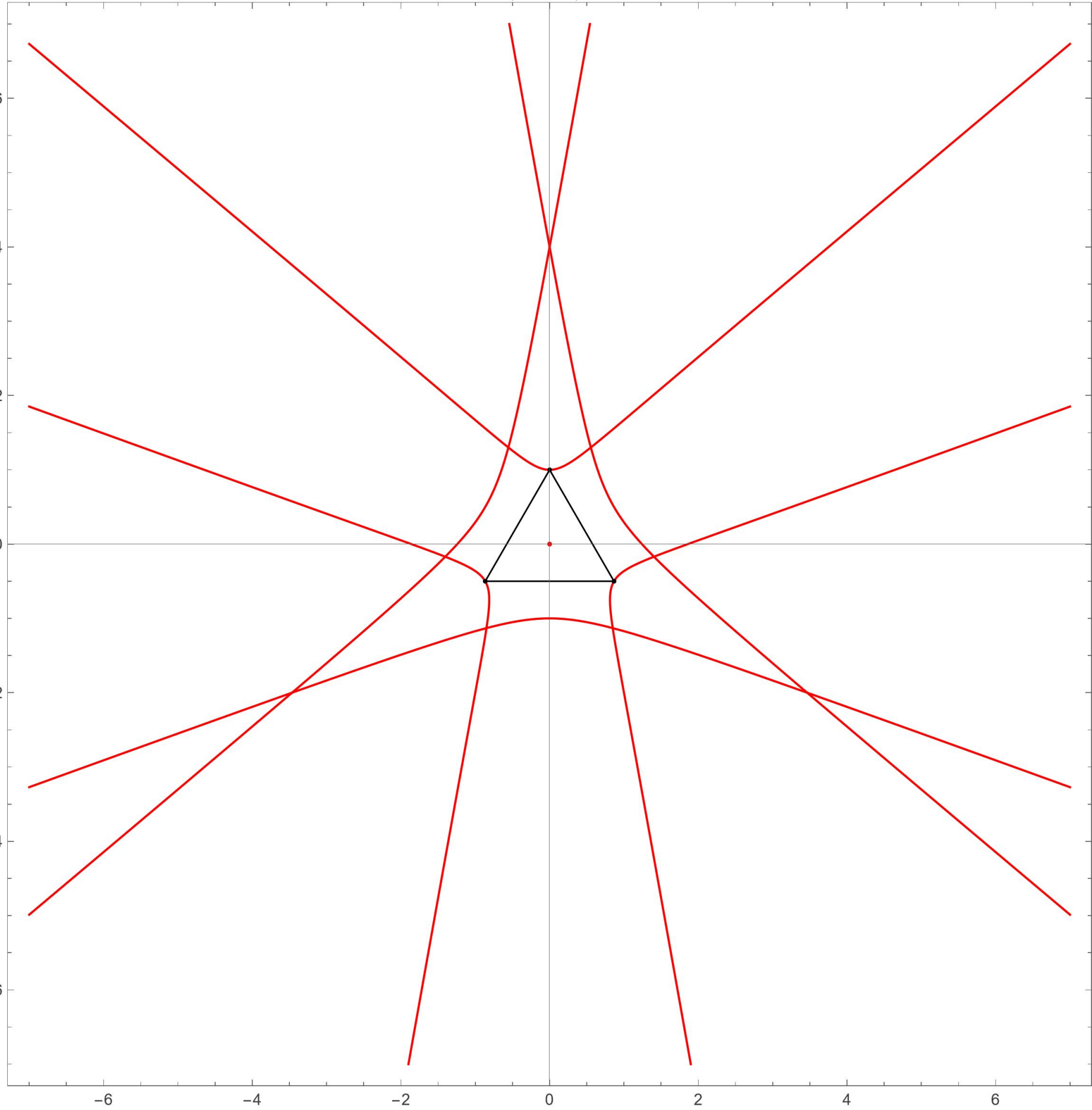
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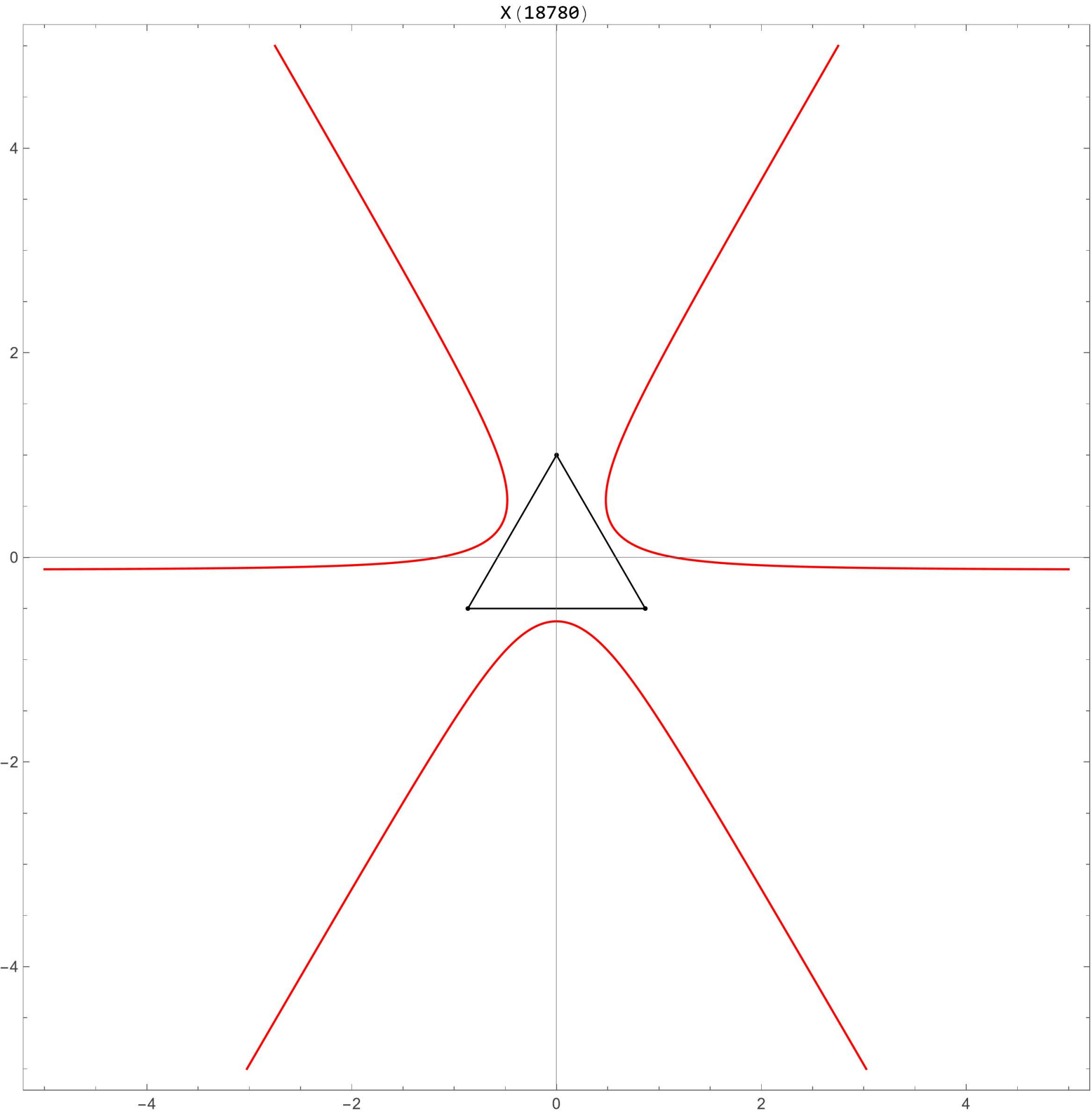
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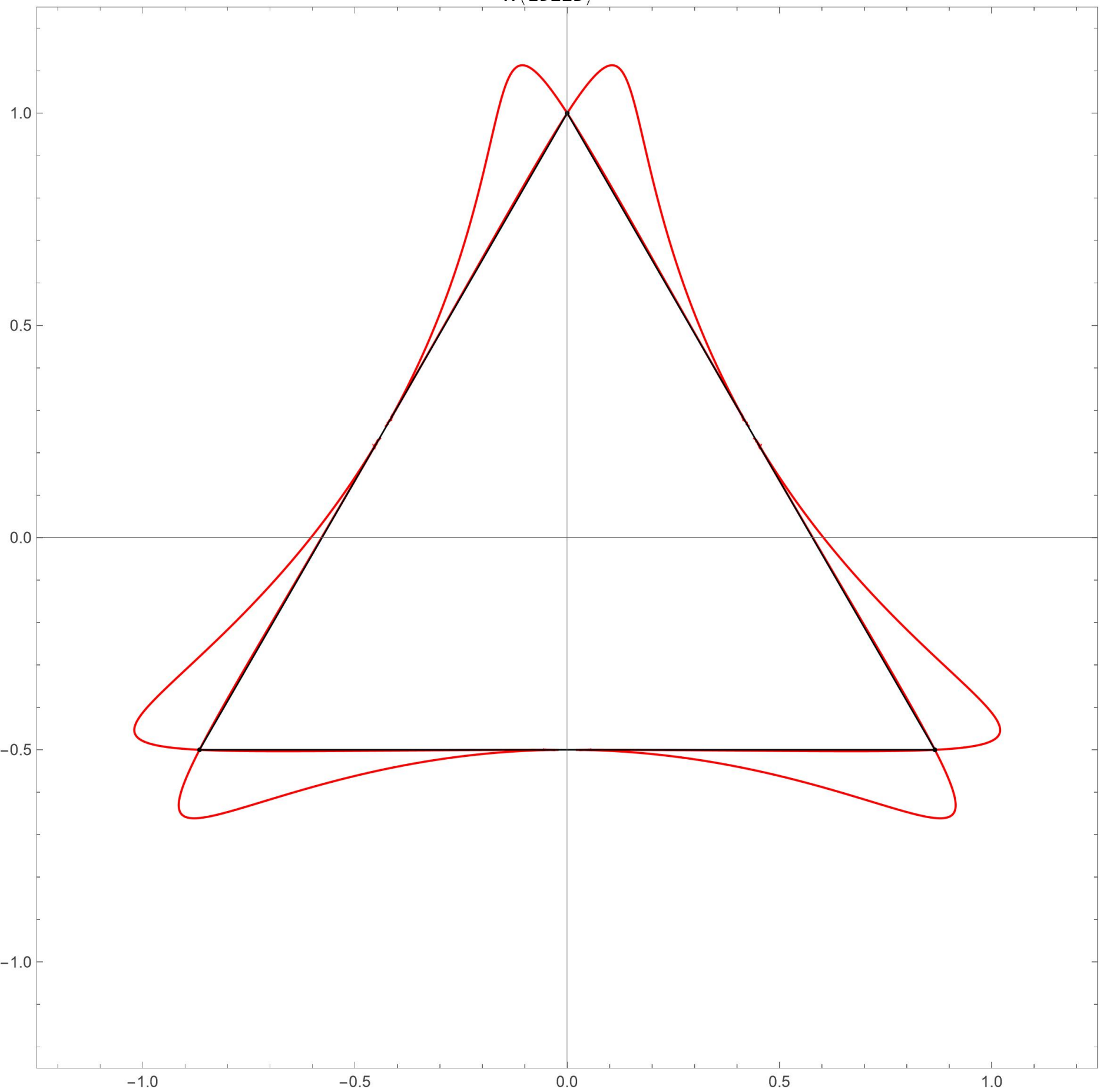
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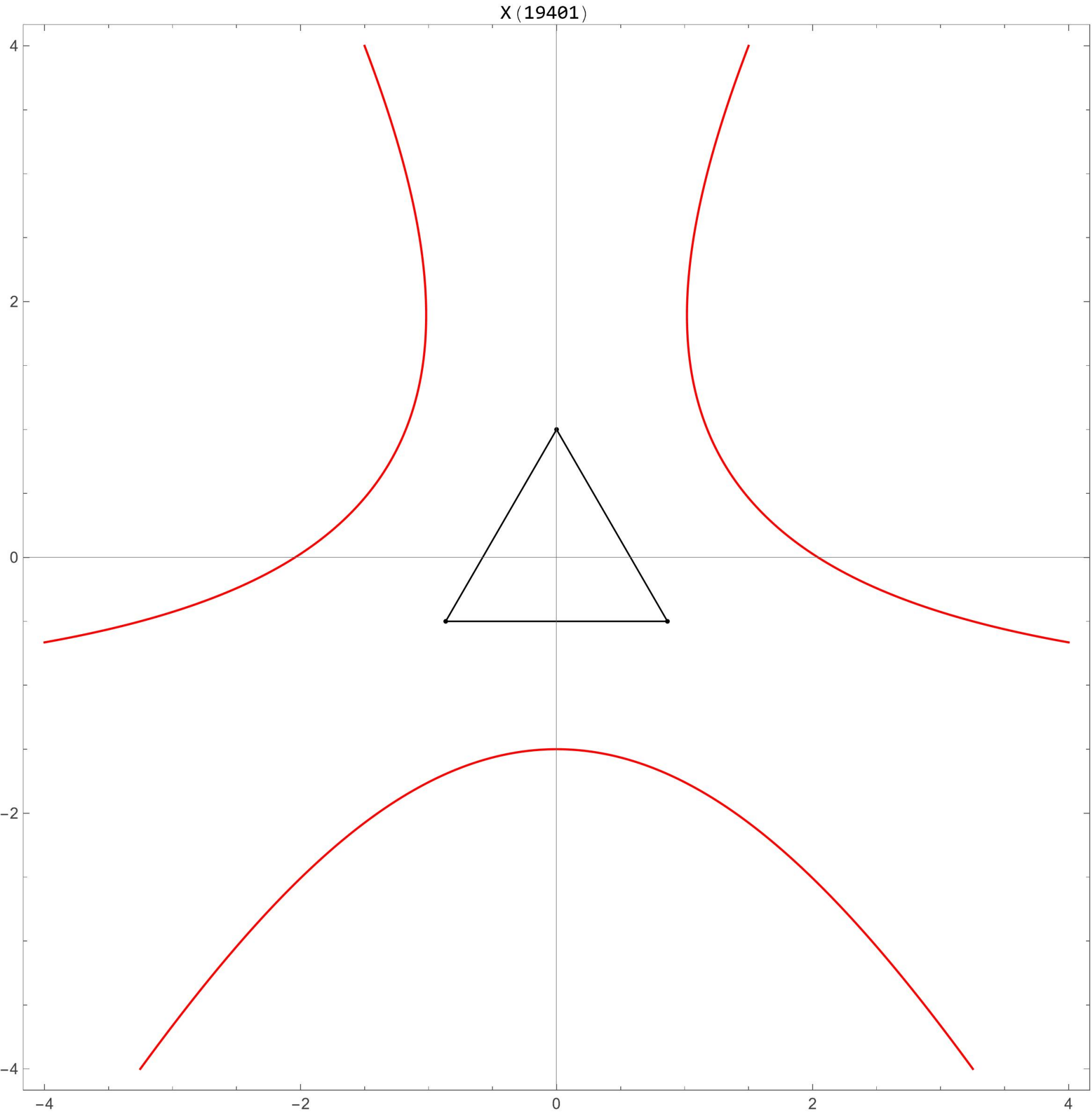
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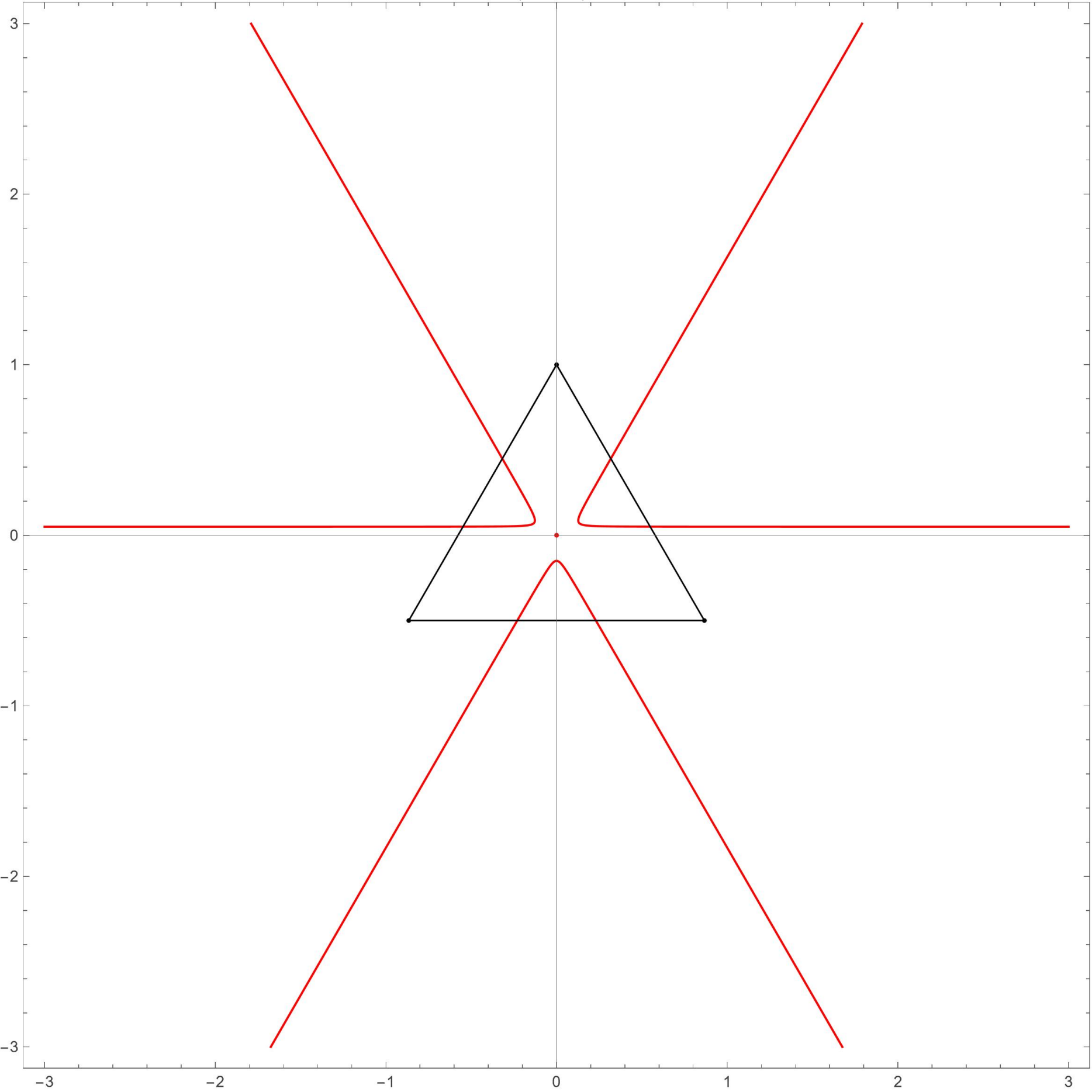
X (19223)



X (19401)



X (19948)



X (19949)

