

Cubic Equations Worksheet

1. $-12x^3 - 24x^2 + 1440x = 0$

2. $7x^3 - 84x^2 - 112x + 1344 = 0$

3. $4x^3 - 8x^2 - 76x + 80 = 0$

4. $-9x^3 + 72x^2 + 999x - 3402 = 0$

5. $2x^3 + 20x^2 - 78x = 0$

6. $-12x^3 - 192x^2 - 108x + 1080 = 0$

7. $14x^3 - 210x^2 + 364x + 3360 = 0$

8. $14x^3 + 266x^2 + 1624x + 3136 = 0$

9. $14x^3 + 210x^2 + 616x - 840 = 0$

10. $4x^3 + 4x^2 - 568x - 2080 = 0$

11. $-3x^3 - 51x^2 - 198x = 0$

12. $11x^3 - 33x^2 - 1034x - 1848 = 0$

13. $7x^3 + 168x^2 + 980x = 0$

14. $-x^3 + 7x^2 - 10x = 0$

15. $x^3 - 20x^2 + 31x + 780 = 0$

16. $12x^3 - 60x^2 - 684x + 2268 = 0$

17. $-9x^3 - 216x^2 - 1665x - 4158 = 0$

18. $5x^3 + 10x^2 - 120x = 0$

19. $9x^3 + 126x^2 - 504x - 8640 = 0$

20. $-9x^3 - 99x^2 + 162x + 648 = 0$

Solutions

1. -12,10
2. 4,12,-4
3. 5,-4,1
4. -9,14,3
5. 0,3,-13
6. -3,2,-15
7. 8,-3,10
8. -8,-4,-7
9. -10,-6,1
10. -10,13,-4
11. -11,-6
12. -2,12,-7
13. 0,-10,-14
14. 0,5,2
15. 13,12,-5
16. -7,3,9
17. -11,-6,-7
18. 0,4,-6
19. 8,-10,-12
20. -2,-12,3

Cubic Equations Worksheet

1. $6x^3+138x^2+996x+2160 = 0$

2. $3x^3+18x^2-48x-288 = 0$

3. $-10x^3+270x^2-1940x+1680 = 0$

4. $-13x^3-65x^2+1053x+5265 = 0$

5. $-7x^3-63x^2+7x+735 = 0$

6. $-6x^3-12x^2+984x+5040 = 0$

7. $-8x^3+56x^2+624x = 0$

8. $-15x^3-210x^2-225x+2970 = 0$

9. $8x^3+32x^2-824x+1456 = 0$

10. $-10x^3+130x^2+1210x-15730 = 0$

11. $-14x^3+504x = 0$

12. $-4x^3-24x^2+64x = 0$

13. $-5x^3-80x^2-305x-330 = 0$

14. $4x^3+52x^2+128x+80 = 0$

15. $-6x^3-24x^2-18x = 0$

16. $-2x^3-16x^2+18x = 0$

17. $-8x^3+16x^2+792x = 0$

18. $-2x^3-6x^2+332x+336 = 0$

19. $15x^3+360x^2+2775x+6750 = 0$

20. $5x^3+120x^2+580x-1680 = 0$

Solutions

1. -9,-10,-4
2. -4,4,-6
3. 14,12,1
4. -9,-5,9
5. 3,-5,-7
6. 14,-10,-6
7. 0,13,-6
8. -11,3,-6
9. 7,-13,2
10. -11,13,11
11. 6,-6
12. -8,2
13. -3,-2,-11
14. -1,-2,-10
15. 0,-1,-3
16. 0,-9,1
17. -9,11
18. -1,12,-14
19. -9,-10,-5
20. -12,-14,2

Cubic Equations Worksheet

1. $2x^3 - 20x^2 - 22x + 360 = 0$
2. $-12x^3 + 120x^2 + 636x - 5544 = 0$
3. $-2x^3 + 36x^2 - 70x - 588 = 0$
4. $-2x^3 - 28x^2 + 114x + 1260 = 0$
5. $8x^3 - 24x^2 - 720x + 3200 = 0$
6. $11x^3 + 209x^2 + 1045x + 847 = 0$
7. $-6x^3 + 48x^2 + 600x - 4800 = 0$
8. $-6x^3 - 126x^2 - 756x - 1296 = 0$
9. $-12x^3 - 156x^2 - 360x = 0$
10. $13x^3 - 182x^2 - 377x + 7098 = 0$
11. $6x^3 + 78x^2 - 84x = 0$
12. $11x^3 + 286x^2 + 2321x + 6006 = 0$
13. $-2x^3 - 8x^2 + 302x + 308 = 0$
14. $-14x^3 - 42x^2 + 1232x = 0$
15. $-5x^3 + 40x^2 + 165x = 0$
16. $-12x^3 - 96x^2 - 84x = 0$
17. $-9x^3 + 9x^2 + 513x + 1215 = 0$
18. $-11x^3 - 132x^2 + 1353x + 15730 = 0$
19. $-9x^3 - 108x^2 + 1377x + 14580 = 0$
20. $12x^3 + 36x^2 - 396x - 420 = 0$

Solutions

1. 5,-4,9
2. 6,11,-7
3. 7,14,-3
4. 7,-6,-15
5. 8,-10,5
6. -1,-11,-7
7. 8,-10,10
8. -3,-12,-6
9. -10,-3
10. 7,13,-6
11. 1,-14
12. -13,-6,-7
13. -1,11,-14
14. 8,0,-11
15. -3,11
16. 0,-1,-7
17. -3,-5,9
18. -10,-13,11
19. -9,12,-15
20. -1,5,-7

Cubic Equations Worksheet

1. $15x^3 - 300x^2 + 1515x - 1950 = 0$

2. $-3x^3 + 33x^2 + 102x - 312 = 0$

3. $10x^3 + 380x^2 + 4710x + 18900 = 0$

4. $3x^3 + 42x^2 + 72x = 0$

5. $15x^3 - 255x^2 + 705x + 975 = 0$

6. $-12x^3 + 12x^2 + 2304x - 8640 = 0$

7. $-3x^3 - 39x^2 - 36x + 540 = 0$

8. $-2x^3 - 26x^2 - 24x = 0$

9. $-12x^3 - 36x^2 + 336x = 0$

10. $15x^3 - 270x^2 + 840x = 0$

11. $-12x^3 + 480x^2 - 6348x + 27720 = 0$

12. $-15x^3 + 135x^2 - 30x - 720 = 0$

13. $12x^3 + 72x^2 - 192x = 0$

14. $-13x^3 - 273x^2 - 962x + 3120 = 0$

15. $13x^3 - 637x = 0$

16. $-8x^3 - 112x^2 + 168x + 4752 = 0$

17. $11x^3 - 33x^2 - 1100x + 3300 = 0$

18. $-14x^3 + 294x^2 - 1456x = 0$

19. $12x^3 + 312x^2 + 2268x + 4320 = 0$

20. $3x^3 - 3x^2 - 72x - 108 = 0$

Solutions

1. 13,2,5
2. 13,-4,2
3. -9,-14,-15
4. -2,-12
5. -1,5,13
6. 12,4,-15
7. -10,3,-6
8. 0,-1,-12
9. 4,-7
10. 14,4
11. 15,14,11
12. 8,-2,3
13. -8,0,2
14. -8,2,-15
15. 7,-7
16. -9,6,-11
17. -10,3,10
18. 8,13
19. -8,-3,-15
20. 6,-2,-3

Cubic Equations Worksheet

1. $-14x^3+154x^2-252x = 0$

2. $-2x^3-8x^2-6x = 0$

3. $7x^3+56x^2-140x = 0$

4. $-x^3+2x^2+101x-462 = 0$

5. $-14x^3-238x^2-1120x-1400 = 0$

6. $-10x^3+730x+720 = 0$

7. $4x^3+28x^2+24x = 0$

8. $-10x^3+120x^2-290x+180 = 0$

9. $-x^3-13x^2-40x = 0$

10. $-10x^3+120x^2+330x-2600 = 0$

11. $-9x^3-27x^2+360x+756 = 0$

12. $-5x^3+25x^2+340x-1440 = 0$

13. $2x^3-6x^2-306x-810 = 0$

14. $6x^3-30x^2-144x = 0$

15. $-2x^3-66x^2-670x-1950 = 0$

16. $12x^3+180x^2+384x-1584 = 0$

17. $6x^3-30x^2-72x+216 = 0$

18. $10x^3+170x^2-60x-7920 = 0$

19. $11x^3-154x^2+495x = 0$

20. $-2x^3+32x^2-120x = 0$

Solutions

1. 0,2,9
2. -1,-3
3. -10,2
4. 7,6,-11
5. -2,-10,-5
6. -8,-1,9
7. -1,-6
8. 9,2,1
9. 0,-8,-5
10. 13,4,-5
11. 6,-2,-7
12. -8,4,9
13. 15,-3,-9
14. 8,0,-3
15. -5,-13,-15
16. -11,2,-6
17. 6,-3,2
18. 6,-11,-12
19. 5,9
20. 6,10

Cubic Equations Worksheet

1. $12x^3+108x^2-984x-8640 = 0$

2. $11x^3+132x^2-209x-858 = 0$

3. $-3x^3-36x^2-123x-126 = 0$

4. $-14x^3+28x^2+574x-588 = 0$

5. $14x^3+56x^2-1624x+4704 = 0$

6. $-7x^3-63x^2+595x+4851 = 0$

7. $3x^3-6x^2-363x+726 = 0$

8. $2x^3-4x^2-30x = 0$

9. $14x^3-224x^2+42x+7560 = 0$

10. $-11x^3-110x^2+275x+2750 = 0$

11. $12x^3+60x^2-1584x-10368 = 0$

12. $10x^3-40x^2-200x+480 = 0$

13. $4x^3-16x^2-236x+504 = 0$

14. $10x^3-90x^2-100x+1680 = 0$

15. $8x^3+48x^2-440x-2016 = 0$

16. $6x^3+150x^2+1032x+1512 = 0$

17. $-14x^3+70x^2+1358x+1274 = 0$

18. $4x^3+28x^2-56x-192 = 0$

19. $11x^3-77x^2-2310x+19800 = 0$

20. $-9x^3-81x^2+1566x+13104 = 0$

Solutions

1. -8,-10,9

2. -13,-2,3

3. -2,-3,-7

4. 7,-6,1

5. 6,4,-14

6. -11,-7,9

7. -11,11,2

8. -3,5

9. 12,-5,9

10. -10,5,-5

11. -8,-9,12

12. 6,-4,2

13. 9,2,-7

14. 7,6,-4

15. -9,-4,7

16. -9,-2,-14

17. -1,13,-7

18. -8,-2,3

19. 12,10,-15

20. -8,13,-14

Cubic Equations Worksheet

1. $12x^3+120x^2+192x = 0$

2. $-12x^3-396x^2-4128x-13104 = 0$

3. $11x^3+121x^2+264x = 0$

4. $-15x^3-135x^2+1230x+10800 = 0$

5. $11x^3-99x^2+88x = 0$

6. $5x^3+25x^2-70x = 0$

7. $-x^3+13x^2+4x-52 = 0$

8. $7x^3+126x^2+749x+1470 = 0$

9. $7x^3+21x^2-1036x-5460 = 0$

10. $-2x^3-44x^2-94x+1820 = 0$

11. $5x^3+70x^2-45x-630 = 0$

12. $-10x^3+20x^2+800x = 0$

13. $7x^3+154x^2+917x+1274 = 0$

14. $-10x^3-80x^2+1080x+7200 = 0$

15. $10x^3-150x^2-580x+10080 = 0$

16. $9x^3-189x^2+972x = 0$

17. $-3x^3+12x^2+288x = 0$

18. $15x^3-60x = 0$

19. $9x^3+135x^2+594x+720 = 0$

20. $10x^3-50x^2+40x = 0$

Solutions

1. -8,-2
2. -13,-14,-6
3. -8,-3
4. -8,-10,9
5. 8,1
6. 0,2,-7
7. -2,13,2
8. -5,-6,-7
9. -10,13,-6
10. 5,-13,-14
11. -3,3,-14
12. -8,10
13. -2,-13,-7
14. -12,10,-6
15. -8,14,9
16. 0,12,9
17. -8,12
18. -2,2
19. -8,-2,-5
20. 4,1

Cubic Equations Worksheet

1. $-5x^3 - 5x^2 + 570x + 2520 = 0$

2. $13x^3 + 195x^2 + 728x + 780 = 0$

3. $-7x^3 + 14x^2 + 651x - 1890 = 0$

4. $-7x^3 - 147x^2 - 756x = 0$

5. $2x^3 - 38x^2 + 172x - 208 = 0$

6. $-14x^3 + 266x^2 - 532x - 7280 = 0$

7. $6x^3 - 144x^2 + 678x + 1980 = 0$

8. $6x^3 + 48x^2 - 126x - 648 = 0$

9. $x^3 - 5x^2 - 24x = 0$

10. $-14x^3 + 196x^2 + 238x - 5460 = 0$

11. $13x^3 + 78x^2 - 715x - 3276 = 0$

12. $-4x^3 - 4x^2 + 328x - 320 = 0$

13. $-3x^3 - 24x^2 + 3x + 24 = 0$

14. $11x^3 - 33x^2 - 770x + 1584 = 0$

15. $x^3 + 4x^2 - 165x = 0$

16. $10x^3 + 140x^2 - 360x - 5040 = 0$

17. $9x^3 - 90x^2 - 351x + 1620 = 0$

18. $9x^3 + 180x^2 + 1179x + 2520 = 0$

19. $11x^3 - 1859x = 0$

20. $11x^3 + 154x^2 + 561x + 594 = 0$

Solutions

1. 12,-6,-7
2. -10,-2,-3
3. -10,3,9
4. 0,-9,-12
5. 13,4,2
6. 13,-4,10
7. 15,-2,11
8. -9,-3,4
9. 8,0,-3
10. 6,13,-5
11. 7,-4,-9
12. 8,-10,1
13. -8,-1,1
14. -8,2,9
15. 11,-15
16. 6,-6,-14
17. 3,12,-5
18. -8,-5,-7
19. 0,13,-13
20. -9,-2,-3

Cubic Equations Worksheet

1. $-10x^3 - 120x^2 + 1710x + 20020 = 0$

2. $-5x^3 + 5x^2 + 450x = 0$

3. $-5x^3 + 40x^2 + 340x - 2400 = 0$

4. $-9x^3 - 117x^2 + 216x + 4860 = 0$

5. $-11x^3 - 286x^2 - 2233x - 5390 = 0$

6. $14x^3 + 70x^2 - 1568x + 2744 = 0$

7. $6x^3 - 36x^2 - 702x + 4620 = 0$

8. $x^3 - 17x^2 + 64x - 48 = 0$

9. $3x^3 + 18x^2 - 471x - 3510 = 0$

10. $x^3 - 133x + 468 = 0$

11. $-3x^3 + 90x^2 - 852x + 2520 = 0$

12. $5x^3 + 10x^2 - 840x = 0$

13. $14x^3 + 140x^2 + 98x - 252 = 0$

14. $13x^3 + 117x^2 + 234x = 0$

15. $-x^3x^2 = 0$

16. $4x^3 + 80x^2 - 28x - 5096 = 0$

17. $12x^3 + 72x^2 - 540x - 1944 = 0$

18. $-13x^3 + 78x^2 - 39x - 130 = 0$

19. $-5x^3 + 105x^2 - 370x - 1200 = 0$

20. $-13x^3 - 91x^2 + 533x - 429 = 0$

Solutions

1. -11,-14,13

2. -9,10

3. -8,6,10

4. -9,-10,6

5. -5,-14,-7

6. 7,-14,2

7. 7,-11,10

8. 4,12,1

9. -9,-10,13

10. 4,-13,9

11. 14,6,10

12. 0,12,-14

13. -9,-2,1

14. 0,-3,-6

15. 0,1

16. 7,-13,-14

17. -9,6,-3

18. -1,5,2

19. 8,15,-2

20. -11,3,1

Cubic Equations Worksheet

1. $2x^3+4x^2-178x-180 = 0$
2. $14x^3+420x^2+4186x+13860 = 0$
3. $6x^3+72x^2-150x-936 = 0$
4. $5x^3+80x^2+220x-800 = 0$
5. $-5x^3+125x^2-1030x+2800 = 0$
6. $-7x^3+35x^2+196x-224 = 0$
7. $10x^3-130x^2+220x = 0$
8. $14x^3+42x^2-2492x-11760 = 0$
9. $9x^3-27x^2-1494x+9072 = 0$
10. $-14x^3+154x^2+854x-6370 = 0$
11. $-5x^3-15x^2 = 0$
12. $11x^3-176x^2-539x+12584 = 0$
13. $-8x^3-136x^2-312x+2376 = 0$
14. $2x^3-6x^2-338x-330 = 0$
15. $3x^3+57x^2+204x-660 = 0$
16. $10x^3-20x^2-550x+560 = 0$
17. $2x^3-28x^2-48x+1152 = 0$
18. $-12x^3-156x^2+1488x+18480 = 0$
19. $15x^3+360x^2+2325x+4500 = 0$
20. $-13x^3+221x^2-312x-3276 = 0$

Solutions

1. -1,-10,9
2. -9,-10,-11
3. -3,4,-13
4. -8,-10,2
5. 8,7,10
6. 8,-4,1
7. 0,11,2
8. 14,-12,-5
9. 8,-14,9
10. 5,-7,13
11. 0,-3
12. -8,13,11
13. -9,-11,3
14. -1,-11,15
15. -10,-11,2
16. 8,1,-7
17. 8,12,-6
18. -10,11,-14
19. -4,-5,-15
20. 14,6,-3

Cubic Equations Worksheet

1. $-5x^3-15x^2+570x-1040 = 0$

2. $-x^3-6x^2+177x+910 = 0$

3. $-4x^3-40x^2+332x+3168 = 0$

4. $7x^3+105x^2+266x-1008 = 0$

5. $-15x^3+435x^2-3810x+9240 = 0$

6. $-7x^3+42x^2+1239x-6370 = 0$

7. $4x^3+100x^2+616x = 0$

8. $11x^3-121x^2-1375x+14157 = 0$

9. $11x^3+165x^2+286x-1320 = 0$

10. $-13x^3-299x^2-2171x-5005 = 0$

11. $2x^3-12x^2-134x-120 = 0$

12. $14x^3-14x^2-168x = 0$

13. $14x^3+168x^2+238x-420 = 0$

14. $-10x^3-170x^2-870x-1350 = 0$

15. $-2x^3+34x^2-144x = 0$

16. $-3x^3-39x^2+372x+4620 = 0$

17. $-13x^3-39x^2+637x-585 = 0$

18. $-2x^3+36x^2-178x+264 = 0$

19. $8x^3+176x^2+960x = 0$

20. $5x^3-120x^2+765x-1350 = 0$

Solutions

1. 8,-13,2
2. 13,-5,-14
3. -8,-11,9
4. -8,-9,2
5. 14,4,11
6. 14,5,-13
7. -11,-14
8. 13,-11,9
9. -12,-5,2
10. -11,-5,-7
11. -1,12,-5
12. 0,-3,4
13. -10,-3,1
14. -9,-3,-5
15. 8,9
16. -10,11,-14
17. -9,5,1
18. 11,4,3
19. -10,-12
20. 15,6,3

Cubic Equations Worksheet

1. $-5x^3+40x^2+615x-1350 = 0$

2. $5x^3+60x^2-140x = 0$

3. $-9x^3+225x^2-1494x+2160 = 0$

4. $-3x^3-15x^2+534x+2184 = 0$

5. $10x^3-120x^2-520x+3360 = 0$

6. $-2x^3-16x^2+230x+1300 = 0$

7. $12x^3-1668x-4680 = 0$

8. $3x^3+51x^2-54x-2160 = 0$

9. $-3x^3-9x^2+435x+2457 = 0$

10. $-x^3-11x^2+64x+704 = 0$

11. $-12x^3+348x^2-2520x = 0$

12. $-3x^3-18x^2+489x+3276 = 0$

13. $-7x^3-7x^2+287x+735 = 0$

14. $-13x^3+299x^2-1690x = 0$

15. $-12x^3+48x^2+1164x+3120 = 0$

16. $-6x^3-108x^2-192x+2880 = 0$

17. $-14x^3+140x^2+154x = 0$

18. $-11x^3+286x^2-1815x = 0$

19. $-5x^3-65x^2-120x+540 = 0$

20. $9x^3-108x^2+45x+594 = 0$

Solutions

1. -9,15,2
2. -14,2
3. 8,15,2
4. 13,-4,-14
5. 14,4,-6
6. -13,-5,10
7. -10,-3,13
8. -8,6,-15
9. -9,13,-7
10. 8,-8,-11
11. 0,15,14
12. 13,-12,-7
13. 7,-3,-5
14. 13,10
15. 13,-4,-5
16. -10,4,-12
17. 0,-1,11
18. 0,15,11
19. -9,-6,2
20. 11,-2,3

Cubic Equations Worksheet

1. $2x^3+10x^2-156x-864 = 0$
2. $12x^3-276x^2+1392x+1680 = 0$
3. $8x^3+112x^2-456x-5040 = 0$
4. $-7x^3-154x^2-784x = 0$
5. $-11x^3-231x^2-1441x-2541 = 0$
6. $-11x^3+22x^2+165x = 0$
7. $8x^3+80x^2+72x = 0$
8. $3x^3+21x^2-108x-756 = 0$
9. $10x^3-150x^2+260x = 0$
10. $2x^3-34x^2-100x+2400 = 0$
11. $-14x^3+126x^2+1358x-1470 = 0$
12. $-3x^3-45x^2+288x+4620 = 0$
13. $-10x^3+120x^2-90x-220 = 0$
14. $x^3-109x-420 = 0$
15. $-7x^3-42x^2+553x+3528 = 0$
16. $-14x^3-154x^2+644x+7840 = 0$
17. $-8x^3+64x^2+1128x-9504 = 0$
18. $-7x^3+63x^2+343x-3087 = 0$
19. $8x^3+120x^2+288x = 0$
20. $5x^3+105x^2+430x-1320 = 0$

Solutions

1. -8,-6,9
2. -1,14,10
3. 7,-6,-15
4. -8,0,-14
5. -11,-3,-7
6. -3,5
7. -9,-1
8. 6,-6,-7
9. 13,2
10. -8,15,10
11. 15,1,-7
12. -11,-14,10
13. -1,11,2
14. 12,-5,-7
15. -8,-7,9
16. -8,7,-10
17. -12,11,9
18. 7,-7,9
19. 0,-3,-12
20. -11,-12,2

Cubic Equations Worksheet

1. $12x^3 - 96x^2 - 1788x + 7920 = 0$

2. $4x^3 + 60x^2 + 128x - 528 = 0$

3. $3x^3 + 69x^2 + 501x + 1155 = 0$

4. $-14x^3 + 1134x = 0$

5. $-9x^3 + 81x^2 + 1008x - 7020 = 0$

6. $10x^3 - 110x^2 - 10x + 110 = 0$

7. $-12x^3 + 324x^2 - 2724x + 7020 = 0$

8. $10x^3 + 70x^2 - 360x - 2520 = 0$

9. $11x^3 - 198x^2 + 55x + 6600 = 0$

10. $-6x^3 + 12x^2 + 318x + 540 = 0$

11. $11x^3 - 154x^2 + 176x + 1056 = 0$

12. $-6x^3 - 132x^2 - 384x + 4032 = 0$

13. $5x^3 + 10x^2 - 165x - 450 = 0$

14. $12x^3 - 48x^2 - 1200x + 4800 = 0$

15. $7x^3 - 35x^2 - 644x - 1092 = 0$

16. $11x^3 - 121x^2 = 0$

17. $-5x^3 + 45x^2 + 5x - 525 = 0$

18. $6x^3 - 234x^2 + 3000x - 12600 = 0$

19. $-10x^3 - 190x^2 - 960x - 1440 = 0$

20. $-10x^3 + 180x^2 - 560x = 0$

Solutions

1. 15,-11,4

2. -11,2,-6

3. -11,-5,-7

4. 0,-9,9

5. 6,-10,13

6. -1,11,1

7. 5,9,13

8. 6,-6,-7

9. 8,15,-5

10. -2,-5,9

11. -2,4,12

12. -12,4,-14

13. 6,-3,-5

14. -10,4,10

15. -2,13,-6

16. 0,11

17. 7,-3,5

18. 15,14,10

19. -3,-4,-12

20. 14,4

Cubic Equations Worksheet

1. $-11x^3 + 77x^2 + 968x + 1540 = 0$
2. $6x^3 - 48x^2 - 1218x + 8820 = 0$
3. $-11x^3 - 176x^2 - 693x = 0$
4. $-4x^3 - 100x^2 - 808x - 2112 = 0$
5. $4x^3 + 116x^2 + 1072x + 3120 = 0$
6. $-x^3 - 4x^2 + 187x + 910 = 0$
7. $12x^3 - 12x = 0$
8. $-12x^3 + 120x^2 + 1764x - 16848 = 0$
9. $-11x^3 + 286x^2 - 1683x - 1980 = 0$
10. $-7x^3 + 84x^2 - 63x - 154 = 0$
11. $-10x^3 + 140x^2 - 90x - 1800 = 0$
12. $7x^3 - 637x + 630 = 0$
13. $10x^3 - 160x^2 - 920x + 16800 = 0$
14. $-12x^3 - 300x^2 - 1800x = 0$
15. $-10x^3 + 430x - 420 = 0$
16. $12x^3 - 48x^2 - 1548x + 9072 = 0$
17. $3x^3 + 54x^2 + 153x - 546 = 0$
18. $11x^3 + 55x^2 - 1254x - 3960 = 0$
19. $14x^3 - 126x^2 - 140x + 2352 = 0$
20. $2x^3 + 58x^2 + 526x + 1430 = 0$

Solutions

1. 14,-2,-5
2. 7,15,-14
3. 0,-9,-7
4. -8,-11,-6
5. -10,-13,-6
6. 14,-13,-5
7. -1,1
8. 13,-12,9
9. 15,12,-1
10. -1,11,2
11. -3,12,5
12. -10,1,9
13. -10,14,12
14. 0,-10,-15
15. 6,1,-7
16. 7,-12,9
17. -13,2,-7
18. -3,-12,10
19. 7,6,-4
20. -13,-11,-5