

Math 29  
Solving Equations

Solve.

1.  $\frac{x}{3} - 2 = x + \frac{4}{5}$

2.  $\frac{2x-1}{4} + 3x = \frac{4}{3}(x+5) - 1$

3.  $\frac{4}{7}(1-9x) - x = 2 - \frac{x+3}{2}$

4. Solve  $x^2 - 8x - 9 = 0$  by a) factoring, b) completing the square, and c) using the quadratic formula.

Find all complex solutions using an appropriate method.

5.  $x^2 - 6 = 0$

6.  $x^2 + 7x + 12 = 0$

7.  $25x^2 - 4 = 0$

8.  $25x^2 - 3 = 0$

9.  $9x^2 + 3x - 6 = 0$

10.  $x^2 = 10 + x$

11.  $3(x-6)^2 + 9 = 0$

12.  $2x^2 + 9 = 0$

13.  $2x^2 + 9x = 0$

14.  $3x^2 + 2x - 4 = 1 + x - x^2$

15.  $2x^2 = 17$

16.  $2x^2 = 17x$

17.  $2x^2 = x - 5$

18.  $x^5 - 14x^4 + 13x^3 = 0$

19.  $(2x-11)(x-4) = 44$

20.  $x^2 + 2x + 2 = 0$

21.  $(x+5)^2 = 5x$

22.  $(x+1)(x+3) = -7$

23.  $2x^3 + 5x^2 - 22x = 55$

24.  $x^3 + 8x = 0$

25.  $x^3 + 8 = 0$

26.  $x^4 - x^2 = 20$

27.  $4x^{\frac{5}{2}} - 7x^{\frac{1}{2}} = 0$

28.  $x^{\frac{2}{3}} + 5x^{\frac{1}{3}} = 14$

29.  $x^{\frac{5}{2}} + 5x^{\frac{3}{2}} - 2x^{\frac{1}{2}} = 0$

30.  $2x^{\frac{5}{3}} = 7x^{\frac{2}{3}} + 4x^{-\frac{1}{3}}$

31.  $|x+4| = 15$

32.  $|9x-2| + 6 = 10$

33. Solve for  $a$ .  $a(b+c) = 4c - a$

34. Solve for  $b$ .  $a(b+c) = 4c - a$

35. Solve for  $c$ .  $\frac{9}{a} + \frac{4}{b} = \frac{1}{c}$

36. Solve for  $a$ .  $mx^2 - ax = 5a$

37. Solve for  $x$ .  $mx^2 - ax = 5a$

38. Solve for  $c$ .  $cx^2 + 3x + c - 2 = 0$

39. Solve for  $x$ .  $cx^2 + 3x + c - 2 = 0$

## Answers

1.  $-\frac{21}{5}$     2.  $\frac{71}{26}$     3.  $\frac{1}{79}$     4. 9, -1    5.  $\pm\sqrt{6}$     6. -4, -3
7.  $\pm\frac{2}{5}$     8.  $\pm\frac{\sqrt{3}}{5}$     9.  $\frac{2}{3}, -1$     10.  $\frac{1\pm\sqrt{41}}{2}$     11.  $6\pm i\sqrt{3}$     12.  $\pm\frac{3i\sqrt{2}}{2}$
13.  $0, -\frac{9}{2}$     14.  $1, -\frac{5}{4}$     15.  $\pm\frac{\sqrt{34}}{2}$     16.  $0, \frac{17}{2}$     17.  $\frac{1\pm i\sqrt{39}}{4}$     18. 0, 1, 13
19.  $0, \frac{19}{2}$     20.  $-1\pm i$     21.  $\frac{-5\pm 5i\sqrt{3}}{2}$     22.  $-2\pm i\sqrt{6}$
23.  $-\frac{5}{2}, \pm\sqrt{11}$     24.  $0, \pm 2i\sqrt{2}$     25.  $-2, 1\pm i\sqrt{3}$     26.  $\pm\sqrt{5}, \pm 2i$
27.  $0, \pm\frac{\sqrt{7}}{2}$     28. -343, 8    29.  $0, \frac{-5\pm\sqrt{33}}{2}$     30.  $-\frac{1}{2}, 4$
31. -19, 11    32.  $-\frac{2}{9}, \frac{2}{3}$
33.  $a = \frac{4c}{b+c+1}$     34.  $b = \frac{4c-a-ac}{a}$     35.  $c = \frac{ab}{9b+4a}$     36.  $a = \frac{mx^2}{x+5}$
37.  $x = \frac{a\pm\sqrt{a^2+20am}}{2m}$     38.  $c = \frac{2-3x}{x^2+1}$     39.  $x = \frac{-3\pm\sqrt{-4c^2+8c+9}}{2c}$