

Solve each equation. Remember to set equal to zero. If there is a linear term you can solve some by factoring. If there is no linear term solve by taking the square root.

9. $x^2 - 4x - 12 = 0$

$(x-6)(x+2) = 0$
 $x = 6$ $x = -2$

11. $x^2 + 25 = 10x$

$x^2 - 10x + 25 = 0$
 $(x-5)^2 = 0$
 $x = 5$

13. $7x^2 - 4x = 0$

$x(7x-4) = 0$
 $x = 0$ $7x-4 = 0$
 $7x = 4$ $x = \frac{4}{7}$

15. $5w^2 - 35w + 60 = 0$

$5(w^2 - 7w + 12) = 0$
 $5(w-4)(w-3) = 0$
 $w = 4$ $w = 3$

17. $15m^2 + 19m + 6 = 0$

$(5m+3)(3m+2) = 0$
 $5m+3 = 0$ $3m+2 = 0$
 $m = -\frac{3}{5}$ $m = -\frac{2}{3}$

19. $36x^2 = 25$

$36x^2 - 25 = 0$ $6x-5 = 0$
 $6x+5 = 0$ $6x = -5$
 $x = -\frac{5}{6}$ $x = \frac{5}{6}$

$6x^3 - 5x^2 - 6x = 0$

$x(6x^2 - 5x - 6) = 0$

$x(2x-3)(3x+2) = 0$

$x = 0$ $x = \frac{3}{2}$ $x = -\frac{2}{3}$

10. $x^2 - 16x + 64 = 0$

$(x-8)^2 = 0$
 $x = 8$

12. $9z = 10z^2$

$9z - 10z^2 = 0$
 $z(9-10z) = 0$
 $z = 0$ $9-10z = 0$
 $-10z = -9$
 $z = \frac{9}{10}$

14. $x^2 = 2x + 99$

$x^2 - 2x - 99 = 0$
 $(x-11)(x+9) = 0$
 $x = 11$ $x = -9$

16. $3x^2 + 24x + 45 = 0$

$3(x^2 + 8x + 15) = 0$
 $3(x+5)(x+3) = 0$
 $x = -5$ $x = -3$

18. $4x^2 + 6 = 11x$

$4x^2 - 11x + 6 = 0$
 $(4x-3)(x-2) = 0$
 $4x-3 = 0$ $x-2 = 0$
 $x = \frac{3}{4}$ $x = 2$

20. $12x^3 - 8x^2 = 15x$

$12x^3 - 8x^2 - 15x = 0$
 $x(12x^2 - 8x - 15) = 0$
 $x = 0$ $(2x-3)(6x+5) = 0$
 $2x-3 = 0$ $6x+5 = 0$
 $x = \frac{3}{2}$ $x = -\frac{5}{6}$

22. $9 = 64x^2$

$64x^2 - 9 = 0$
 $(8x+3)(8x-3) = 0$
 $x = -\frac{3}{8}$ $x = \frac{3}{8}$

Solve by factoring:

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

$(x+3)(x-5) = 0$
 $x = -3$ $x = 5$

17. $x^2 + 6x = -9$

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

18. $9y^2 = 49$

$9y^2 - 49 = 0$
 $(3y+7)(3y-7) = 0$
 $3y+7 = 0$ $3y-7 = 0$
 $y = -\frac{7}{3}$ $y = \frac{7}{3}$

20. $25x^2 - 4 = 0$

$(5x+2)(5x-2) = 0$
 $5x+2 = 0$ $5x-2 = 0$
 $x = -\frac{2}{5}$ $x = \frac{2}{5}$

Solve by taking the square root:

22. $5a^2 - 15 = 0$

$5a^2 = 15$
 $a^2 = 3$
 $a = \pm\sqrt{3}$

24. $\frac{1}{5}(x-4)^2 = 6$

$(x-4)^2 = 30$
 $x-4 = \pm\sqrt{30}$
 $x = 4 + \sqrt{30}$ $x = 4 - \sqrt{30}$

16. $z^2 - 5z = 0$

$z(z-5) = 0$
 $z = 0$ $z = 5$

18. $3q^2 - 7q = 20$

$3q^2 - 7q - 20 = 0$
 $(3q+5)(q-4) = 0$
 $3q+5 = 0$ $q-4 = 0$
 $q = -\frac{5}{3}$ $q = 4$

19. $2c^2 - 24c + 54 = 0$

$(2c-6)(c-9) = 0$
 $2c-6 = 0$ $c-9 = 0$
 $c = 3$ $c = 9$

21. $25x^2 - 30x + 9 = 0$

$(5x-3)(5x-3) = 0$
 $(5x-3)^2 = 0$
 $5x-3 = 0$
 $x = \frac{3}{5}$

23. $3(x-2)^2 = 24$

$(x-2)^2 = 8$
 $x-2 = \pm\sqrt{8}$
 $x = 2 + \sqrt{8}$ $x = 2 - \sqrt{8}$

24. $3x^2 + 42 = 0$

$3x^2 = -42$
 $x^2 = -14$
 $x = \pm\sqrt{-14}$
 So \emptyset