

Solving Quadratic Equations

- * Use the notes you took while watching the video
- * Complete at least some problems from each section below
- * Find answers at the end of this document

Part 1:

Isolate x^2 . Then, take the square root on both sides.

* Do not forget that taking the square root produces a positive and negative.

1 Solve for x :

a $x^2 = 100$

b $2x^2 = 50$

c $5x^2 = 20$

g $3x^2 - 2 = 25$

h $4 - 2x^2 = 12$

i $4x^2 + 2 = 10$

2 Solve for x :

a $(x - 1)^2 = 9$

b $(x + 4)^2 = 16$

c $(x + 2)^2 = -1$

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

h $(3x + 2)^2 = 4$

i $\frac{1}{3}(2x + 3)^2 = 2$

2 Solve for x using the Null Factor law:

a $x(x - 5) = 0$

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

c $(x + 1)(x - 3) = 0$

d $3x(7 - x) = 0$

e $-2x(x + 1) = 0$

f $4(x + 6)(2x - 3) = 0$

g $(2x + 1)(2x - 1) = 0$

h $11(x + 2)(x - 7) = 0$

i $-6(x - 5)(3x + 2) = 0$

Part 2:

Move everything to one side. Factor out the GCF. Use the Null Factor Law.

1 Solve for x :

a $x^2 - 7x = 0$

d $x^2 = 4x$

g $4x^2 - 3x = 0$

b $x^2 - 5x = 0$

e $3x^2 + 6x = 0$

h $4x^2 = 5x$

c $x^2 = 8x$

f $2x^2 + 5x = 0$

i $3x^2 = 9x$

Part 3:

Factor using the X-Factor Method. Then, use the Null Factor Law.

3 Solve for x :

a $x^2 + 9x + 20 = 0$

b $x^2 + 11x + 28 = 0$

c $x^2 + 2x = 8$

j $10 - 3x = x^2$

k $x^2 + 12 = 7x$

l $9x + 36 = x^2$

4 Solve for x :

a $2x^2 + 2 = 5x$

d $2x^2 + 5x = 3$

b $3x^2 + 8x = 3$

e $2x^2 + 5 = 11x$

c $3x^2 + 17x + 20 = 0$

f $2x^2 + 7x + 5 = 0$

Part 4:

6 Solve for x by first expanding brackets and then making one side of the equation zero:

a $x(x + 5) + 2(x + 6) = 0$

b $x(1 + x) + x = 3$

c $(x - 1)(x + 9) = 8x$

d $3x(x + 2) - 5(x - 3) = 17$

e $4x(x + 1) = -1$

f $2x(x - 6) = x - 20$

7 Solve for x by first eliminating the algebraic fractions:

a $\frac{x}{3} = \frac{2}{x}$

b $\frac{4}{x} = \frac{x}{2}$

c $\frac{x}{5} = \frac{2}{x}$

d $\frac{x - 1}{4} = \frac{3}{x}$

e $\frac{x - 1}{x} = \frac{x + 11}{5}$

f $\frac{x}{x + 2} = \frac{1}{x}$

g $\frac{2x}{3x + 1} = \frac{1}{x + 2}$

h $\frac{2x + 1}{x} = 3x$

i $\frac{x + 2}{x - 1} = \frac{x}{2}$

ANSWERS

Part 1:

1 a $x = \pm 10$ b $x = \pm 5$ c $x = \pm 2$

g $x = \pm 3$ h no solution i $x = \pm \sqrt{2}$

2 a $x = 4$ or -2 b $x = 0$ or -8 c no solution

g $x = 2\frac{1}{2}$ h $x = 0$ or $-\frac{4}{3}$ i $x = \frac{\pm\sqrt{6} - 3}{2}$

2 a $x = 0$ or 5 b $x = 0$ or -3 c $x = -1$ or 3

d $x = 0$ or 7 e $x = 0$ or -1 f $x = -6$ or $\frac{3}{2}$

g $x = \pm\frac{1}{2}$ h $x = -2$ or 7 i $x = 5$ or $-\frac{2}{3}$

Part 2:

1 **a** $x = 0$ or 7 **b** $x = 0$ or 5 **c** $x = 0$ or 8
d $x = 0$ or 4 **e** $x = 0$ or -2 **f** $x = 0$ or $-\frac{5}{2}$
g $x = 0$ or $\frac{3}{4}$ **h** $x = 0$ or $\frac{5}{4}$ **i** $x = 0$ or 3

Part 3:

3 **a** $x = -4$ or -5 **b** $x = -4$ or -7 **c** $x = -4$ or 2
j $x = -5$ or 2 **k** $x = 3$ or 4 **l** $x = 12$ or -3
4 **a** $x = \frac{1}{2}$ or 2 **b** $x = -3$ or $\frac{1}{3}$ **c** $x = -4$ or $-\frac{5}{3}$
d $x = \frac{1}{2}$ or -3 **e** $x = \frac{1}{2}$ or 5 **f** $x = -1$ or $-\frac{5}{2}$

Part 4:

6 **a** $x = -4$ or -3 **b** $x = -3$ or 1 **c** $x = \pm 3$
d $x = -1$ or $\frac{2}{3}$ **e** $x = -\frac{1}{2}$ **f** $x = \frac{5}{2}$ or 4
7 **a** $x = \pm\sqrt{6}$ **b** $x = \pm\sqrt{8}$ **c** $x = \pm\sqrt{10}$
d $x = 4$ or -3 **e** $x = -1$ or -5 **f** $x = 2$ or -1
g $x = \frac{1}{2}$ or -1 **h** $x = 1$ or $-\frac{1}{3}$ **i** $x = -1$ or 4