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 $x^2 - 7x = 0$ **b** $x^2 - 5x = 0$ **c** $x^2 = 8x$

d $x^2 = 4x$ **e** $3x^2 + 6x = 0$ **f** $2x^2 + 5x = 0$

g $4x^2 - 3x = 0$ **h** $4x^2 = 5x$ **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 $2x^2 + 2 = 5x$ **b** $3x^2 + 8x = 3$ **c** $3x^2 + 17x + 20 = 0$

d $2x^2 + 5x = 3$ **e** $2x^2 + 5 = 11x$ **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