

Part 1 - Solving Quadratics

Solve with the Zero Product Property.

1. $(x-4)(x+7) = 0$
 $x-4=0$ $x+7=0$
 $x=4$ $x=-7$

2. $3x(x-9) = 0$
 $3x=0$ $x-9=0$
 $x=0$ $x=9$

Solve by first factoring, then using the Zero Product Property.

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

	$x+4$	
x	x^2	$4x$
2	$2x$	8

 $(x+4)(x+2) = 0$
 $x = -4$ $x = -2$

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

	$x-8$	
x	x^2	$-8x$
-2	$-2x$	16

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

Solve by first factoring out a GCF, then using the Zero Product Property.

5. $3x^2 - 12x = 0$
 $3x(x-4) = 0$
 $3x = 0$ $x-4 = 0$
 $x = 0$ $x = 4$

6. $6x^2 + 8x = 0$
 $2x(3x+4) = 0$
 $2x = 0$ $3x+4 = 0$
 $x = 0$ $-4 -4$
 $3x = -4$
 $x = -\frac{4}{3}$

Solve by factoring.

7. $3p^2 - 2p - 5 = 0$

	$3p-5$	
p	$3p^2$	$-5p$
1	$3p$	-5

 $(p+1)(3p-5) = 0$
 $p = -1$ $p = \frac{5}{3}$

8. $4x^2 - 15x - 25 = 0$

	$4x+5$	
x	$4x^2$	$5x$
-5	$20x$	-25

 $(4x+5)(x-5) = 0$
 $x = -\frac{5}{4}$ $x = 5$

9. Solve with the quadratic formula: $4x^2 + 8x + 3 = 0$

$$x = \frac{-8 \pm \sqrt{8^2 - 4(4)(3)}}{2(4)}$$

$$= \frac{-8 \pm \sqrt{64 - 48}}{8}$$

$$= \frac{-8 \pm \sqrt{16}}{8} = \frac{-8 \pm 4}{8}$$

$-\frac{4}{8} = -\frac{1}{2}$

$-\frac{12}{8} = -1\frac{1}{2}$

Solve using any method.

10. $4x^2 = 64$
 $\frac{4x^2}{4} = \frac{64}{4}$
 $x^2 = 16$
 $x = 4$ $x = -4$

11. $x^2 - 7x = 18$
 $x^2 - 7x - 18 = 0$
 $(x-9)(x+2) = 0$
 $x = 9$ $x = -2$

Part 2 - Changing Forms/Writing Equations

Change from factored to standard form by multiplying.

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

	x+3	
x	x ²	3x
-7	-7x	-21

$x^2 - 4x - 21$

2. $y = 3x(x - 5)$

$3x^2 - 15x$

3. $y = (x + 3)^2$

	x+3	
x	x ²	3x
+3	3x	9

$x^2 + 6x + 9$

Change to standard form.

4. $y = -4(x - 5)^2 + 6$

	x-5	
x	x ²	-5x
-5	-5x	25

$-4(x^2 - 10x + 25) + 6$

$-4x^2 + 40x - 100 + 6$

$y = -4x^2 + 40x - 94$

Change to vertex form by completing the square.

5. $y = x^2 - 12x + 4$

	x-6	
x	x ²	-6x
-6	-6x	36

-32

$y = (x - 6)^2 - 32$

Extra Practice

Identify what method to use, and then solve.

1. $5x^2 + 15x = 0$

$5x(x + 3) = 0$

$x = 0$ $x = -3$

2. $8x^2 + 12x = 0$

$4x(2x + 3) = 0$

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

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

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

$x = 3$ $x = 2$

4. $x^2 + 6x + 36 = 0$

$x = \frac{-6 \pm \sqrt{6^2 - 4(1)(36)}}{2(1)}$

$x = \frac{-6 \pm \sqrt{36 - 144}}{2}$

$x = \frac{-6 \pm \sqrt{-108}}{2}$ No solution

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

	2x+1	
x	2x ²	1x
-5	10x	-5

$(x - 5)(2x + 1) = 0$

$x = 5$ $x = -\frac{1}{2}$

6. $\frac{3x^2}{3} = -\frac{17}{3}$

$\sqrt{x^2} = \sqrt{-\frac{17}{3}}$

No solution.