Bell Work

Find the roots of each quadratic function.

1. $f(x) = x^2 + 12x + 32$

2. $f(x) = x^2 - 12x + 27$

3. $f(x) = x^2 - 5x - 24$

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

Use the X-Game.

Solve.

$$\underset{a}{2}x^2+\underset{b}{3}x-\underset{c}{10}=0$$

The Quadratic Formula

$$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

$$x=\frac{-3\pm\sqrt{(3)^2-4(2)(-10)}}{2(2)}=\frac{-3\pm\sqrt{9-(-80)}}{4}$$

$$=\frac{-3\pm\sqrt{89}}{4}$$

Solve.

$$3x^2 - 4x - 9 = 0$$

a b c

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{4 \pm \sqrt{(-4)^2 - 4(3)(-9)}}{2(3)} = \frac{4 \pm \sqrt{16 - (-108)}}{6}$$

$$= \frac{4 \pm \sqrt{124}}{6} = \frac{4 \pm \sqrt{4}\sqrt{31}}{6} = \frac{4 \pm 2\sqrt{31}}{6} = \frac{2 \pm \sqrt{31}}{3}$$

The 124 can be reduced by 4, a square number.

All 3 outside numbers can be reduced by 2. This only happens when all 3 can be reduced.

Solve.

$$6x^2 + x - 8 = 0$$

a b c

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-1 \pm \sqrt{(1)^2 - 4(6)(-8)}}{2(6)} = \frac{-1 \pm \sqrt{1 + 192}}{12} = \frac{-1 \pm \sqrt{193}}{12}$$

Solve.

$$4x^2 - 8x + 1 = 0$$

a b c

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{8 \pm \sqrt{(8)^2 - 4(4)(1)}}{2(4)} = \frac{8 \pm \sqrt{64 - 16}}{8} = \frac{8 \pm \sqrt{48}}{8}$$

The 48 can be reduced by 16, a square number.

$$= \frac{8 \pm \sqrt{16}\sqrt{3}}{8} = \frac{8 \pm 4\sqrt{3}}{8} = \frac{4 \pm \sqrt{3}}{4}$$

All 3 outside numbers can be reduced by 4.

The Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

You need to memorize it.

Assignment:

Page 361 # 18 – 34 evens, 46 – 53 all

Find the zeros of each function by using the Quadratic Formula.

18. $f(x) = 3x^2 - 10x + 3$

19. $g(x) = x^2 + 6x$

20. $h(x) = x(x - 3) - 4$

21. $g(x) = -x^2 - 2x + 9$

22. $p(x) = 2x^2 - 7x - 8$

23. $f(x) = 7x^2 - 3$

24. $r(x) = x^2 + x + 1$

25. $h(x) = -x^2 - x - 1$

26. $f(x) = 2x^2 + 8$

27. $f(x) = 2x^2 + 7x - 13$

28. $g(x) = x^2 - x - 5$

29. $h(x) = -3x^2 + 4x - 4$

Solve each equation by any method.

45. $x^2 - 3x = 10$

46. $x^2 - 16 = 0$

47. $4x^2 + 4x = 15$

48. $x^2 + 2x - 2 = 0$

49. $x^2 - 4x - 21 = 0$

50. $4x^2 - 4x - 1 = 0$

51. $6x^2 = 150$

52. $x^2 = 7$

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