

Bell Work

1. What is the vertex of the parabola for the function below?

$$f(x) = 2(x - 4)^2 + 3$$

2. What is a root of a quadratic function?
3. What is the equation of the absolute value parent function?
4. What are 2 numbers that add up to 13 and multiply to get 36?

Find the roots of the quadratic function.

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

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

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

$$x - 6 = 0 \quad x + 2 = 0$$

$$x = 6 \quad x = -2$$

$$x = 6, -2$$

1. Set the function equal to 0.

2. Factor the equation.

Find 2 numbers that multiply to get the last number and add up to the middle number.

3. Set each equation to 0 and solve.

4. 2 answers

Find the roots of the quadratic function.

$$f(x) = x^2 - 9x + 20$$

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

$$(x - 4)(x - 5) = 0$$

$$x - 4 = 0 \quad x - 5 = 0$$

$$x = 4 \quad x = 5$$

$$x = 4, 5$$

1. Set the function equal to 0.

2. Factor the equation.

Find 2 numbers that multiply to get the last number and add up to the middle number.

3. Set each equation to 0 and solve.

4. 2 answers

Find the roots of the quadratic function.

$$f(x) = -x^2 + 4x - 4$$

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

$$\frac{-x^2}{-1} + \frac{4x}{-1} - \frac{4}{-1} = \frac{0}{-1}$$

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

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

$$x - 2 = 0 \quad x - 2 = 0$$

$$x = 2$$

The x^2 always needs to be positive, so divide everything by -1.

1. Set the function equal to 0.
2. Factor the equation.

Find 2 numbers that multiply to get the last number and add up to the middle number.

3. Set each equation to 0 and solve.
4. 2 answers

Since the answers are the same, you only need to write it down once.

Find the roots of the quadratic function.

$$f(x) = 2x^2 + 16x - 96$$

$$2x^2 + 16x - 96 = 0$$

$$x^2 + 8x - 48 = 0$$

We can divide everything by 2.

$$(x + 12)(x - 4) = 0$$

$$x + 12 = 0 \quad x - 4 = 0$$

$$x = -12 \quad x = 4$$

$$x = -12, 4$$

1. Set the function equal to 0.

2. Factor the equation.

Find 2 numbers that multiply to get the last number and add up to the middle number.

3. Set each equation to 0 and solve.

4. 2 answers

Find the roots of the quadratic function.

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

$$4x^2 + 16x = 0$$

$$x^2 + 4x = 0$$

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

$$x + 0 = 0 \quad x + 4 = 0$$

$$x = 0 \quad x = -4$$

$$x = 0, -4$$

We can divide everything by 4.

Since there isn't a last number, think of it as 0. So what 2 numbers multiply to get 0 and add up to 4?

1. Set the function equal to 0.
2. Factor the equation.

Find 2 numbers that multiply to get the last number and add up to the middle number.

3. Set each equation to 0 and solve.
4. 2 answers

Find the roots of the quadratic function.

$$f(x) = -3x^2 + 75$$

$$-3x^2 + 75 = 0$$

We can divide everything by -3.

$$x^2 - 25 = 0$$

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

Since the middle number is missing, think of it as 0. What 2 numbers multiply to get -25 and add up to 0?

$$x + 5 = 0 \quad x - 5 = 0$$

$$x = -5 \quad x = 5$$

$$x = -5, 5$$

1. Set the function equal to 0.
2. Factor the equation.

Find 2 numbers that multiply to get the last number and add up to the middle number.

3. Set each equation to 0 and solve.
4. 2 answers

Assignment:

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Find the zeros of each function by using a graph and table.

18. $f(x) = -x^2 + 4x - 3$

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

20. $f(x) = x^2 - 9$

Find the zeros of each function.

37. $f(x) = 6x - x^2$

38. $g(x) = x^2 - 25$

39. $h(x) = x^2 - 12x + 36$

40. $f(x) = 3x^2 - 12$

41. $g(x) = x^2 - 22x + 121$

42. $h(x) = 30 + x - x^2$

43. $f(x) = x^2 - 11x + 30$

44. $g(x) = x^2 - 8x - 20$

45. $h(x) = 2x^2 + 18x + 28$