Solving Quadratic Equations Worksheet

Algebra

Grades 9 to 12

Solving Quadratic Equations Worksheet | Grades 9 to 12

Skill Questions

Name: ....

Date: ....

1 Find the solutions to the quadratic equation using any strategy.

$$x^2 = -5x$$

Answer

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2 Find the solutions to the quadratic equation using any strategy.

$$x^2 + 8x = -15$$

Answer

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3 Find the zeros of the quadratic equation using any strategy.

$$2x^2 + 3x - 10 = 0$$

Answer

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4 Find the zeros of the quadratic equation using any strategy.

$$25x^2 = 16$$

Answer

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5 Find the solution to the quadratic equation using any strategy.

$$b^2 + 8b = 1$$

Answer

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6 Find the roots to the quadratic equation using any strategy.

$$7x^2 = 49x$$

Answer

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7 Find the roots of the quadratic equation using any method.
$2x^2 - 7x - 13 = -10$

Answer

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8 Find the roots of the quadratic equation using any method.

$x^2 - 13x + 24 = 2x - 32$

Answer

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9 Find the roots of the quadratic equation using any method.

$x^2 - 4x - 3 = -x^2 + x$

Answer

10 Find the roots of the quadratic equation using any method.

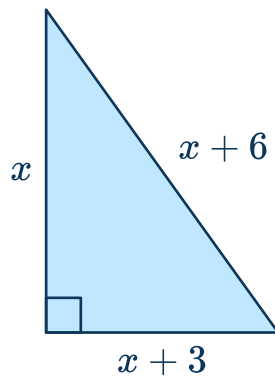$4x^2 - 6x = x^2 - 2x - 1$

Answer

Applied Questions

11 A ball is thrown straight up with an initial velocity of 64 ft/s. Using, $h = -16t^2 + vt$, how long will it take to reach a height of 32 feet?

Answer

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12 The area of a rectangle is 102 ft². If the length is twice the width, find the dimensions of the rectangle to the nearest tenth.

Answer

13 Find the lengths of the sides of the right triangle.

Answer

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14 The product of two consecutive integers is 72. What are the numbers?
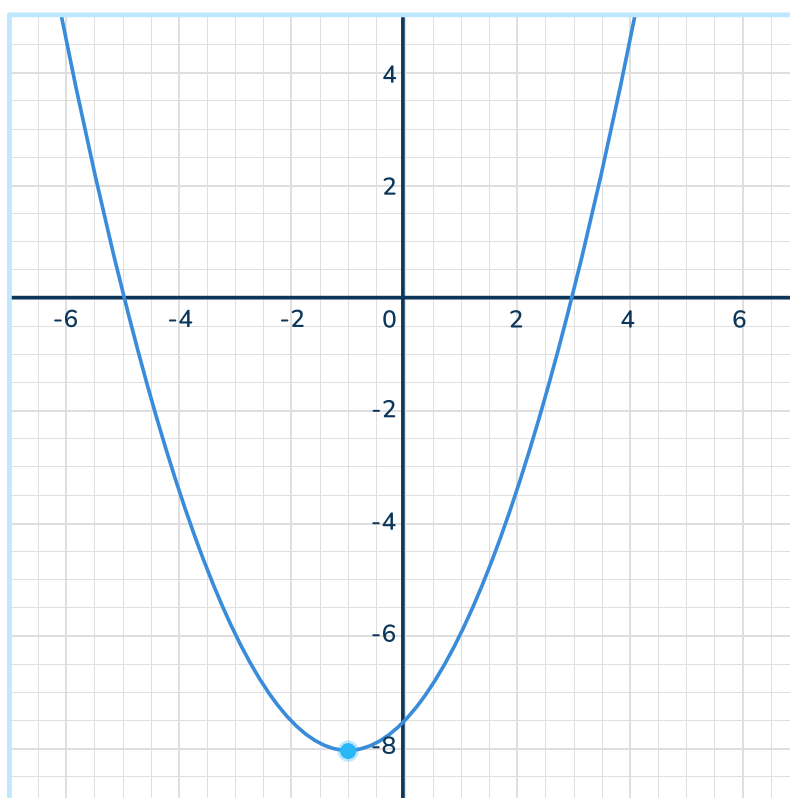
Answer

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15 A quadratic equation is graphed below.

A) Write the equation of the quadratic function.
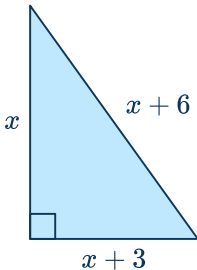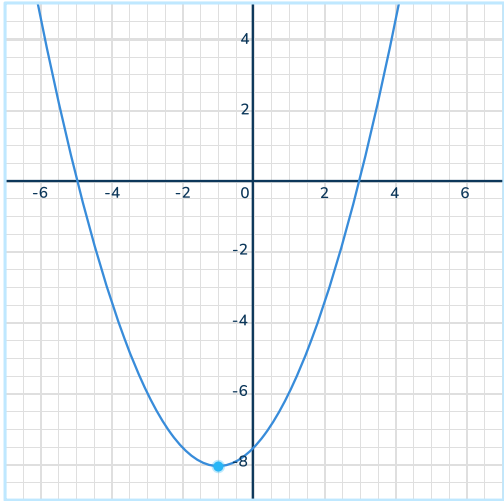
Answer

B) Find the solutions to the quadratic.

Answer

Solving Quadratic Equations Worksheet | Grades 9 to 12 | Answers

Question number	Question	Answers	Standard
9	Find the roots of the quadratic equation using any method. $x^2 - 4x - 3 = -x^2 + x$	$x^2 - 4x - 3 = -x^2 + x$ $2x^2 - 5x - 3 = 0$ $(2x + 1)(x - 3) = 0$ $x = -\frac{1}{2} \qquad x = 3$	HSA-REI.B.4b
10	Find the roots of the quadratic equation using any method. $4x^2 - 6x = x^2 - 2x - 1$	$4x^2 - 6x = x^2 - 2x - 1$ $3x^2 - 4x + 1 = 0$ $(3x - 1)(x - 1) = 0$ $x = \frac{1}{3} \qquad x = 1$	HSA-REI.B.4b
11	A ball is thrown straight up with an initial velocity of 64 ft/s. Using, $h = -16t^2 + vt + s$, how long will it take to reach a height of 32 feet?	$h = -16t^2 + 64t$ $32 = -16t^2 + 64t$ $0 = -16t^2 + 64t - 32$ $0 = -16(t^2 - 4t + 2)$ $0 = t^2 - 4t + 2$ $x = t = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $t = \dfrac{-(-4) \pm \sqrt{(-4)^2 - 4(1)(2)}}{2(1)}$ $t = 2 \pm 2\sqrt{2}$ $t = 3.41 \qquad t = 0.60$ The ball will reach a height of 32 feet after 0.60 seconds and then at 3.41 seconds.	HSA-REI.B.4b

Solving Quadratic Equations Worksheet | Grades 9 to 12 | Answers

Question number	Question	Answers	Standard
12	The area of a rectangle is 102 ft2, if the length is twice the width. Find the dimensions of the rectangle to the nearest tenth.	Length = $2x$ Width = x Area = length x width $2x$ x x = 102 $2x^2$ = 102 x^2 = 51 $x = \pm 7.1$ $x = 7.1$ is the value of x to use since there cannot be a negative side length. Length = $2 \times 7.1 = 14.2$ ft Width = 7.1 ft	HSA-REI.B.4b
13	Find the lengths of the sides of the right triangle. x $x+6$ $x+3$	Use the Pythagorean theorem: $x^2 + (x+3)^2 = (x+6)^2$ $x^2 + x^2 + 6x + 9 = x^2 + 12x + 36$ $2x^2 + 6x + 9 = x^2 + 12x + 36$ $x^2 - 6x - 27 = 0$ $(x-9)(x+3) = 0$ $x - 9 = 0 \qquad x + 3 = 0$ $x = 9 \qquad\quad x = -3$ $x = 9$ is the value of x to use since there cannot be a negative side length. $x = 9$ $x + 3 = 9 + 3 = 12$ $x + 6 = 9 + 6 = 15$ The side lengths are 9 ft, 12 ft, and 15 ft	HSA-REI.B.4b

Solving Quadratic Equations Worksheet | Grades 9 to 12 | Answers

Question number	Question	Answers	Standard
14	The product of two consecutive integers is 72. What are the numbers?	$x(x+1) = 72$ $x^2 + x - 72 = 0$ $(x+9)(x-8) = 0$ $x = -9 \qquad x = 8$ The two integers are 8,9 OR -9,-8	HSA.REI. B.4
15	A quadratic equation is graphed below. A) Write the equation of the quadratic function. B) Find the solutions to the quadratic. 	A) $f(x) = \dfrac{1}{2}(x+1)^2 - 8$ B) $x = 3$ and $x = -5$	HSA.REI. B.4

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