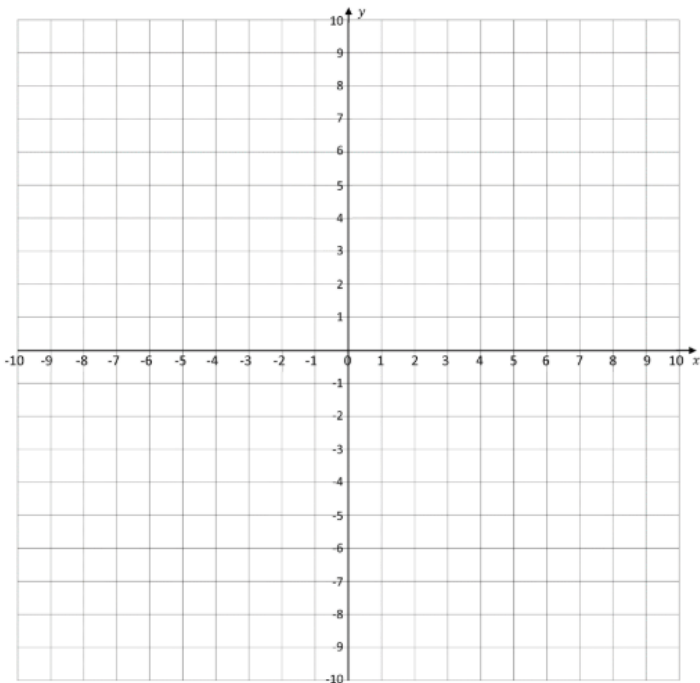


Unit 3 Study Guide: Quadratic Functions

1.) $y = 2x^2 - 4x - 6$

- a.) Open up or down? _____
- b.) Axis of Symmetry: _____
- c.) Vertex: _____ Max/Min? _____
- d.) y - intercept: _____
- e.) Circle x-intercepts
- f.) Wide, Narrow, or Normal? _____
- g.) Domain: _____ Range: _____
- h.) Interval of Increase: _____
- i.) Interval of Decrease: _____

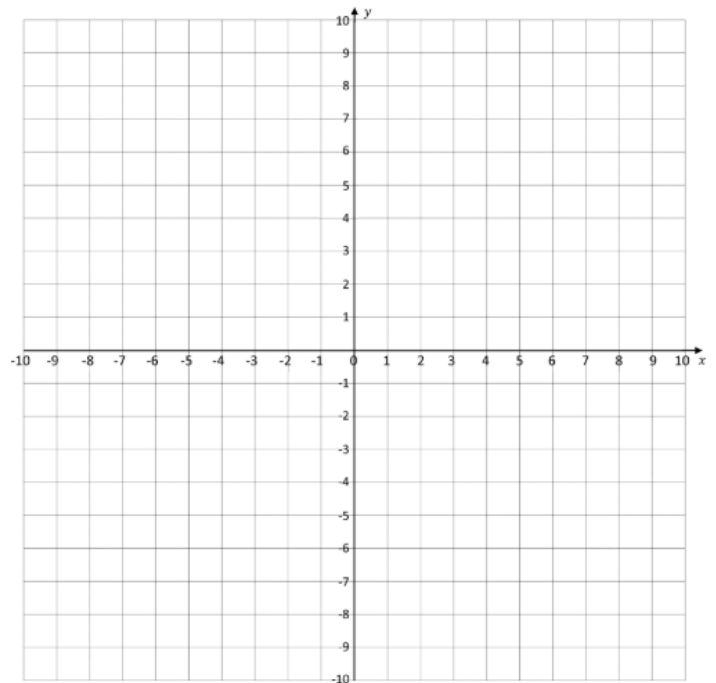
Show all work:



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

- a.) Open up or down? _____
- b.) Axis of Symmetry: _____
- c.) Vertex: _____ Max/Min? _____
- d.) y - intercept: _____
- e.) Circle x-intercepts
- f.) Wide, Narrow, or Normal? _____
- g.) Domain: _____ Range: _____
- h.) Interval of Increase: _____
- i.) Interval of Decrease: _____

Show all work:

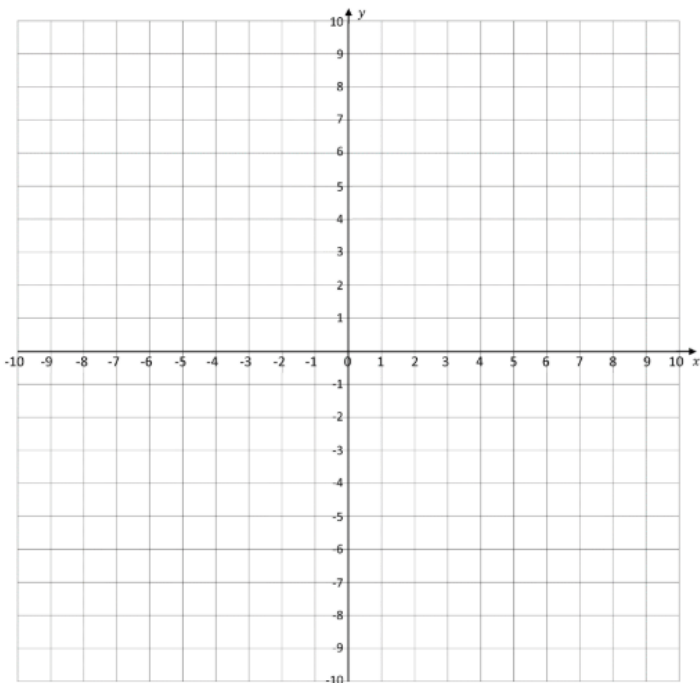


Unit 3 Study Guide: Quadratic Functions

3.) $y = (x + 4)(x - 2)$

- a.) x - intercepts: _____, _____
- b.) Axis of Symmetry: _____
- c.) Vertex: _____ Max/Min? _____
- d.) y - intercept: _____
- e.) Wide, Narrow, or Normal? _____
- f.) Domain: _____ Range: _____
- h.) Interval of Increase: _____
- i.) Interval of Decrease: _____

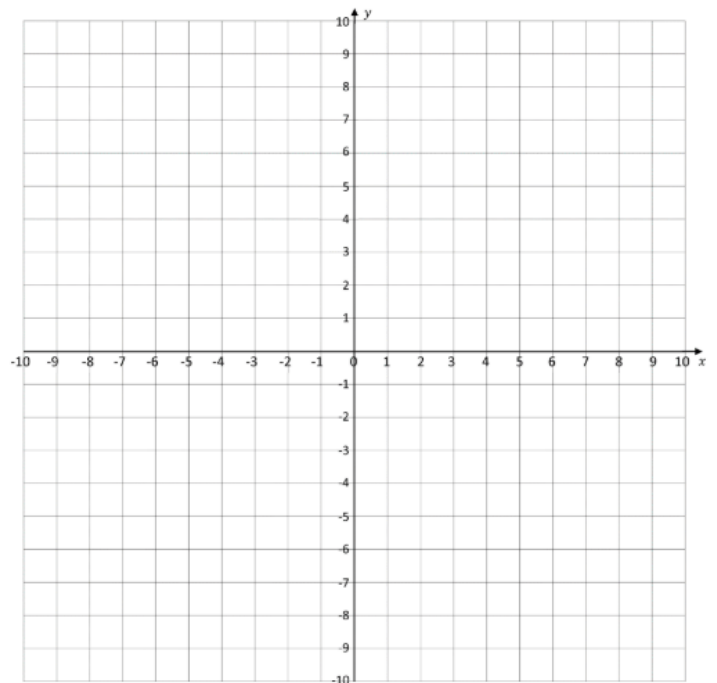
Show all work:



4.) $y = -\frac{1}{2}(x - 6)(x + 2)$

- a.) x - intercepts: _____, _____
- b.) Axis of Symmetry: _____
- c.) Vertex: _____ Max/Min? _____
- d.) y - intercept: _____
- e.) Wide, Narrow, or Normal? _____
- f.) Domain: _____ Range: _____
- h.) Interval of Increase: _____
- i.) Interval of Decrease: _____

Show all work:

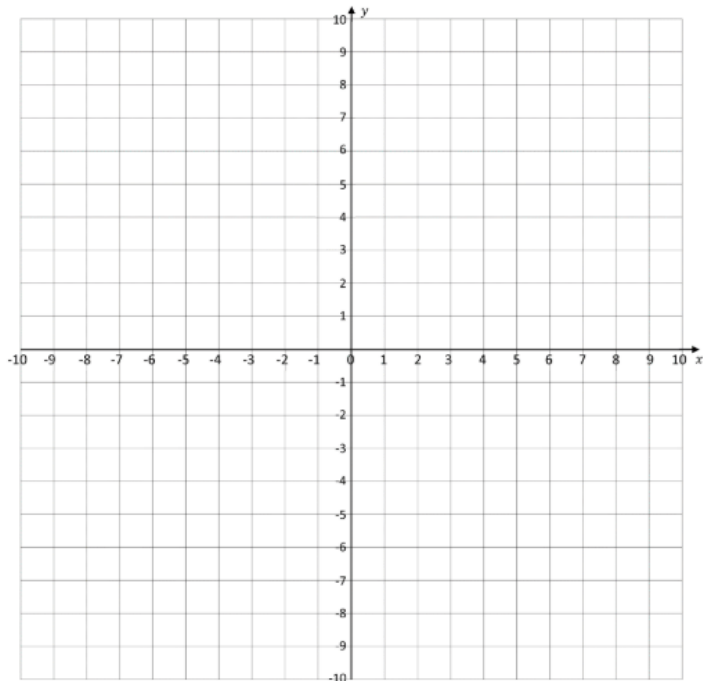


Unit 3 Study Guide: Quadratic Functions

5.) $y = 2(x - 1)^2 - 8$

- a.) Vertex: _____ max/min? _____
- b.) Axis of Symmetry: _____
- c.) y - intercept: _____
- d.) Circle x - intercepts.
- e.) Domain: _____ Range: _____
- f.) Interval of Increase: _____
- g.) Interval of Decrease: _____
- h.) Name all transformations from the parent graph.

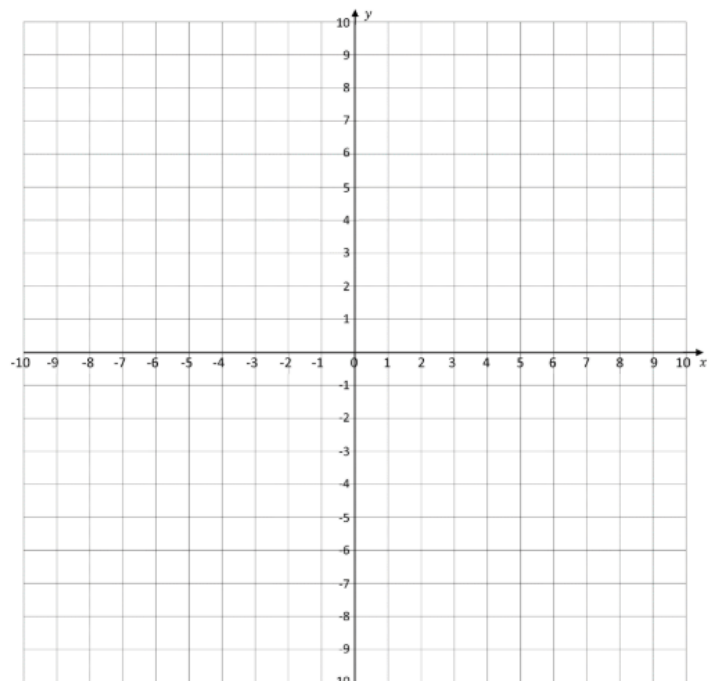
Show all work:



6.) $y = -\frac{1}{2}(x + 2)^2 + 8$

- a.) Vertex: _____ max/min? _____
- b.) Axis of Symmetry: _____
- c.) y - intercept: _____
- d.) Circle x - intercepts.
- e.) Domain: _____ Range: _____
- f.) Interval of Increase: _____
- g.) Interval of Decrease: _____
- h.) Name all transformations from the parent graph.

Show all work:



Unit 3 Study Guide: Quadratic Functions

7.) Israel Almaraz and Samantha Sitompul are having a water balloon fight. Israel throws the water balloon high into the air to aim it at Samantha's head. The height of the balloon in feet, h , after t seconds is $h(t) = -4.9t^2 + 27t + 2.4$.

a.) How high is the balloon after 1 second? Round to the nearest tenth.

b.) Find the maximum height of the balloon after it is thrown in the air. Round to the nearest tenth.

c.) When will the balloon land on Samantha's head? Round to the nearest tenth.

8.) Laurence Deason and Esmael Reyes have a brilliant idea to create and sell a new lotion to help relieve stress due to math test anxiety. They have secret ingredients to calm, relax, and increase brain power to combat even the hardest of math tests. This new lotion is called Mathex. The price of Mathex varies to ensure a maximize profit. The function, $P(x) = -80x^2 + 480x - 570$ models the profit in hundreds of dollars, where x is the price of a bottle of lotion. At what price will Laurence and Esmael receive the maximum profit? What will the maximum profit be?

9.) Ian Fanning got in trouble with the law and is forced to do community service for the city of Palm Springs. He has to help the community by creating a new map of the local park because the city is building a new path around the park. The rectangular park has dimensions of 50 feet and 120 feet. The park has a rectangular grass field with a planned uniform path surrounding it. If the area of the entire park, including the new path is planned to be 7424ft^2 , what would the width of the new path be?