Lesson 2 Exit Ticket 1 KEY

1. Graph $y=(-2x+4)^{2}-3$.

Key



Lesson 2 Exit Ticket 2 KEY

1. Find the vertex of $y=6x^{2}+4$. Is it a minimum or maximum?

Key

Vertex = (0,4); It is a minimum.

Lesson 2 Exit Ticket 3 KEY

1. Find the domain and range of $y=5x^{2}-8$.

Key

Domain = All real numbers

Range = All *y* ≥ −8 OR [−8, ∞)

Lesson 2 Exit Ticket 4 KEY

1. Describe how you find the rate of change of a quadratic function. Provide an example.

Key

To find the average rate of change of a quadratic function, you find the ratio of the change of *f*(*x*) to the change in *x*-values. You must first determine a specific interval to examine. You will use this interval to substitute values into the formula:

$$\frac{f\left(b\right)-f(a)}{b-a}$$

Suppose you wish to find the average rate of change of $y=2x^{2}-3$. Also, suppose that you choose the interval $0\leq x\leq 2$. Either using substitution of the
*x*-values into the function, or examining a table or graph, evaluate the function for each *x*-value. Using each *f*(*x*) and our given *x*-values, we have:

$$\frac{f\left(2\right)-f(0)}{2-0}$$

$$=\frac{5-\left(-3\right)}{2}$$

$$=\frac{8}{2}$$

$$=4$$

Thus, the average rate of change of the quadratic function is 4.

Lesson 2 Exit Ticket 5

1. Provide a real-world quadratic function example. Give details related to the graph, such as vertex, whether it opens up or down, minimum/maximum, domain, range, and rate of change, and relate these details to the context of the problem.

Key

Quadratic functions are used to model dropped objects. Suppose we have an object that is dropped from a height of 60 feet. We then have the function:

$$h=-16t^{2}+60$$

The function models the height of the object, *h*, after *t* seconds have passed.

The graph will be a parabola with the following characteristics:

* Vertex at (0, 60)
* Opening down
* Maximum at the vertex of (0, 60)
* Domain: [0, 1.94]. Note: Rounding to the nearest hundredth was used.
* Range: [0, 60]
* Rate of change (average rate of change): −30.93 (rounded)

The vertex states that the original height was at 60 feet after 0 seconds. The parabola opens down because the object was *dropped*. The vertex is a maximum because the object was dropped.

The domain only reaches from 0 to approximately 1.94 because the object reaches the ground after approximately 1.94 seconds. Also, time cannot be negative, and thus the domain starts at 0.

The range reaches from the ground height of 0 feet to the original height of 60 feet. The average rate of change reveals that the object drops approximately 30.93 feet per second.