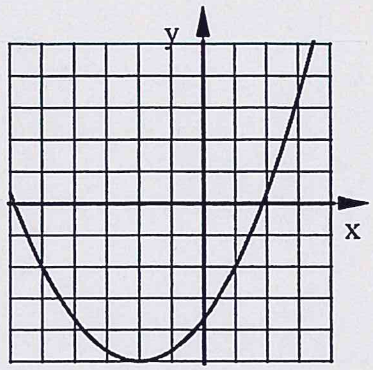
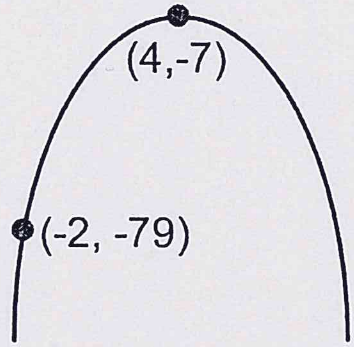
Bellwork Alg 2 Monday, September 24, 2018

Write the equation of each quadratic in Vertex Form.

1. 

2. 

3. State the y-intercept of this quadratic. $y = -3(x + 6)^2 - 11$

4. Amir sells his extreme cheesesteak sandwiches for $8 each. At this price he usually sells 100 cheesesteak sandwiches a day. After an informal survey, he concludes that for every $0.50 increase, he will sell five fewer sandwiches.

Let: x = number of price increases

$R(x)$ = Total Revenue Function: $R(x) = -2.5(x - 2)^2 + 810$

a. Find the Domain of this function.

b. Find the selling price and Revenue after three price increases.

c. Find the number of price increases that will maximize Revenue.

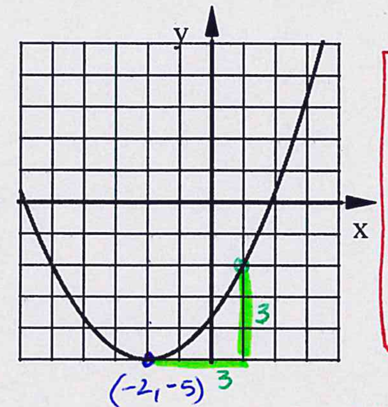
d. Find the maximum revenue.

Bellwork   Alg 2   Monday, September 24, 2018

Answers

Write the equation of each quadratic in Vertex Form.

1.



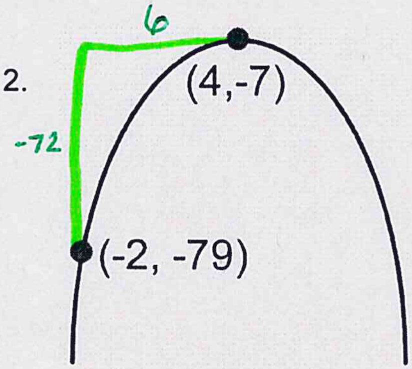
$y = \frac{1}{3}(x+2)^2 - 5$

parent function: 3, 9

this function: 3, 3

$a = \frac{3}{9} = \frac{1}{3}$

2.



parent function: 6, 36

this function: 6, -72

$a = \frac{-72}{36} = -2$

$y = -2(x-4)^2 - 7$

3. State the y-intercept of this quadratic. $y = -3(x+6)^2 - 11$

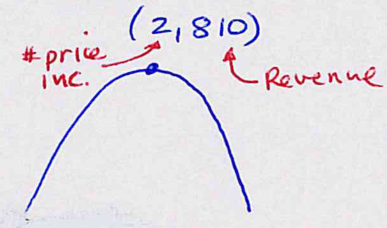
$y\text{-int} = -3(0+6)^2 - 11 = -3(6)^2 - 11 = -3(36) - 11$
$= -108 - 11$

$y\text{-int} = -119$

4. Amir sells his extreme cheesesteak sandwiches for $8 each. At this price he usually sells 100 cheesesteak sandwiches a day. After an informal survey, he concludes that for every $0.50 increase, he will sell five fewer sandwiches.

Let: x = number of price increases

$R(x)$ = Total Revenue Function: $R(x) = -2.5(x-2)^2 + 810$



a. Find the Domain of this function.

Domain: all Real #'s for which Revenue is greater than zero

b. Find the selling price and Revenue after three price increases.

x = 3

3 price increases ⇒ 8 + 3(.50) = $9.50 selling price

R(3) = −2.5(3−2)² + 810 = $807.5 Revenue after 3 price increases

c. Find the number of price increases that will maximize Revenue.

X-coord at vertex

2 price increases will maximize profit

d. Find the maximum revenue.

Y at vertex

maximum profit = $810