Math 20-2 Quadratic Function Properties – part three:

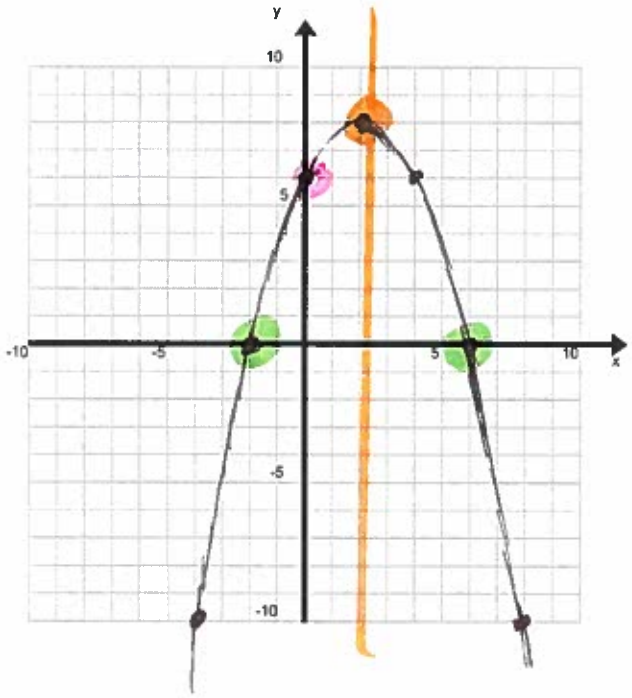
1. Given the equation of the quadratic function:
   - find points to plot using a mapping diagram and/or a table of values
   - find the x – intercepts
   - find the y – intercept
   - find the vertex
   - write the equation for the axis of symmetry
   - write the domain and range

$y = -\frac{1}{2}x^2 + 2x + 6$

$x = 2$

options for points

X	Y
-4	-10
-2	0
0	6
2	8
4	6
6	0
8	-10



x-intercepts
(-2, 0) and (6, 0)

y-intercept
(0, 6)

Vertex
V(2, 8)

Symmetry
x = 2

Domain: all reals, $x \in R$

Range: max y-value of 8, $y \leq 8$

2. The number of hamburgers sold at a concession stand is related to the price of the hamburgers as follows:

Price	$3.00	$3.25	$3.75	$4.50
Burgers Sold	500	475	425	350

a) Calculate the revenue for each burger price.

Price	$3.00	$3.25	$3.75	$4.50	← L_1
Revenue	$1500.00	1543.75	1593.75	1575	← L_2

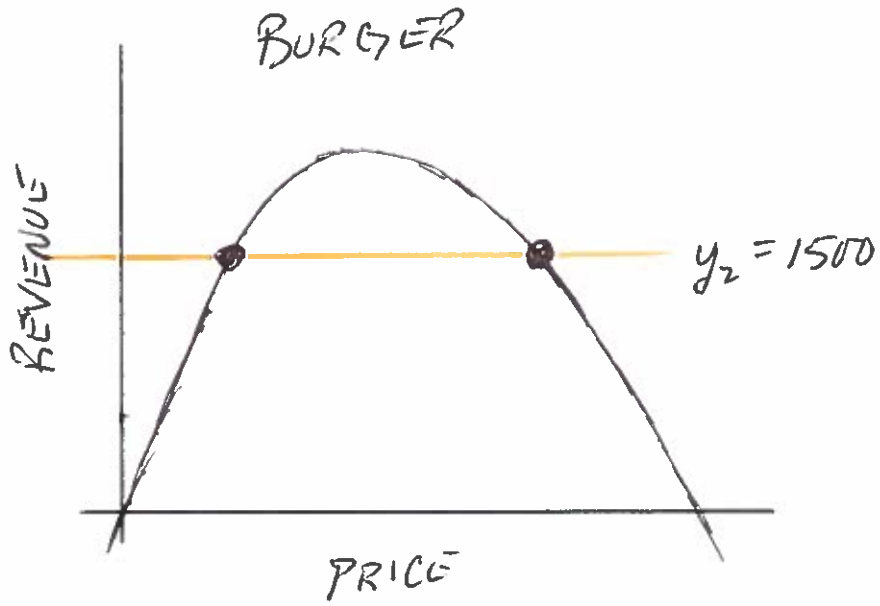
b) Find a quadratic function to represent the price and the revenue for the hamburger. State a window for this information and sketch your function:

X: [-1, 10, 1]
Y: [-500, 2000, 500]

$y = ax^2 + bx + c$

$a = -100$
$b = 800$
$c = 0$

$y = -100x^2 + 800x$



c) We know a $3.00 hamburger price will generate revenue of $1500. What other price will also generate revenue of $1500?

$y_2 = 1500$ "intersect" $x = 5$ $y = 1500$ #5.00 price is also $1500.

d) If you were the manager of the concession, what price would you set for the hamburgers to maximize the concession revenue?

Maximum $x = 4$ $y = 1600$

Sell burgers at #4.00.