Math 20-2 **Name: _____**

Quadratic Functions Quiz 2 (2020)

1. A concert sells all 5000 seats to stadium when the price of a ticket is $30. The concert manager needs to increase the revenue from the sale of tickets, so she commissions a survey to predict ticket sales for different ticket prices. The results are shown in the table below.

Ticket Price ($)	30.00	35.00	45.00	50.00	70.00
Expected Sales	5000	4500	3500	3000	1000

a) Find the revenue generated for each ticket price.

Ticket Price	$ 30.00	$ 35.00	$ 45.00	$ 50.00	$ 70.00
Revenue					

b) Determine a best-fit Revenue function using **quadratic regression** with the ticket price and revenue data. Round off your values to the nearest hundredth as necessary.

$y = ax^2 + bx + c$

$a =$

$b =$

$c =$

Write the equation:

[5]

c) What would be a good window to view this on your calculator

X: [min , max , scale] =

Y: [min , max , scale] =

2. Use your quadratic function skills to solve or justify with **algebra and/or a sketch:**

   a) The quadratic function $y = -1(x + 7)(x - 1)$ has x-intercepts of (7,0) and (-1,0). Explain or justify why you agree or disagree.

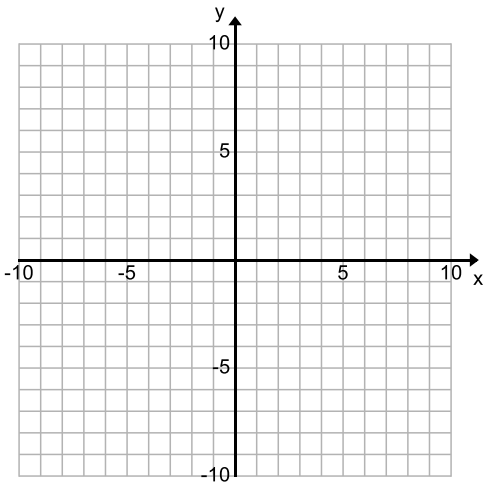
   b) A quadratic function has x-intercepts of (-6,0) and (10,0). Explain or justify why you agree or disagree that the axis of symmetry is $x = 8$.

[6]

   c) The quadratic function $y = 0.5(x + 5)(x - 3)$ has an axis of symmetry $x = -1$.
      i. Determine the coordinates of the vertex for this function.
      ii. Determine the range for this function.

3. The quadratic function $y = a(x - h)^2 + k$ has a vertex of (-2,-5) and passes through the point (2,3).

   a) Plot the vertex, plot the point (2,3) and draw in the line of symmetry. Sketch the function.

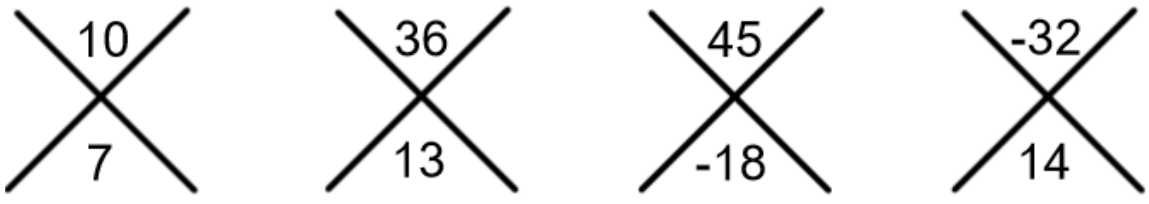


   b) Determine the value of ***a*** that satisfies this quadratic function, rounded to the nearest tenth if necessary.

[3]

4. Complete the diamonds. The top cell contains the product of the numbers in the left and right cells while the bottom cell contains the sum.

[2]



5. Solve by factoring.
   a) $x^2 - 8x - 20 = 0$

   b) $2x^2 + x - 6 = 0$

[9]

   c) $x^2 - x - 10 = 4x + 14$