

# PRE-AP ALGEBRA 2

- 1) By using algebra, find the equation of the parabola which passes through the points  $(-3,1)$ ,  $(-1,1)$  and  $(0,7)$ .

$$y = ax^2 + bx + c$$

$$(-3,1) \rightarrow 1 = a(-3)^2 + b(-3) + c \rightarrow 9a - 3b + c = 1$$

$$(-1,1) \rightarrow 1 = a(-1)^2 + b(-1) + c \rightarrow a - b + c = 1$$

$$(0,7) \rightarrow 7 = a(0)^2 + b(0) + c \rightarrow c = 7$$

$$\begin{array}{l} 9a - 3b + 7 = 1 \quad 9a - 3b = -6 \quad 3a - b = -2 \\ a - b + 7 = 1 \quad a - b = -6 \quad 3(a - b = -6) \end{array}$$

$$\begin{array}{l} 9a - 3b = -6 \\ -3a + 3b = 18 \\ \hline 6a = 12 \end{array}$$

$$a = 2, \quad a - b = 2 - b = -6$$

$$-2 + b = 6, \quad b = 8 \Rightarrow$$

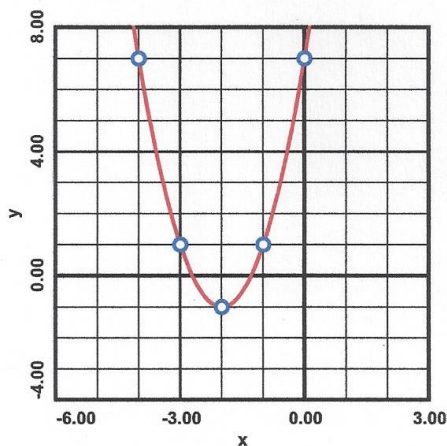
$$y = 2x^2 + 8x + 7$$

- 2) Confirm your result for problem 1 using quadratic regression.

$$y = 2x^2 + 8x + 7$$

$$r^2 = 1 \text{ (perfect correlation)}$$

- 3) For the parabola  $y = 2x^2 + 8x + 7$  graphed:



## 1A.3. CLASSWORK

- a) fill in the table,

x	y
-4	7
-3	1
-2	-1
-1	1
0	7

$$m(-3,5) = \frac{1-7}{-3-4} = \frac{-6}{-1} = 6$$

$$m(-2,5) = \frac{-1-1}{-2-3} = \frac{-2}{-1} = 2$$

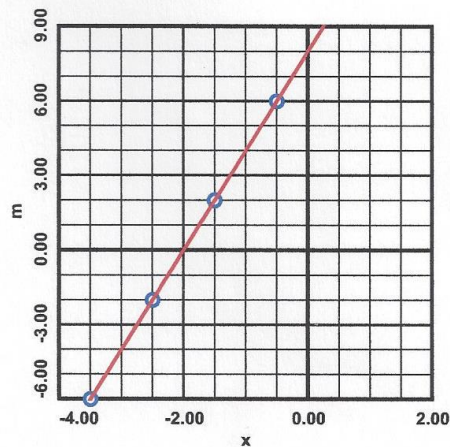
- b) calculate the slopes, i.e., fill in the table,

x	m
-3.5	-6
-2.5	-2
-1.5	2
-0.5	6

$$m(-1,5) = \frac{1-1}{-1-2} = \frac{0}{-1} = 0$$

$$m(-0.5) = \frac{7-1}{0-1} = \frac{6}{-1} = -6$$

- c) and graph the slope  $m$  on the following grid.



- d) What is the linear equation which represents the slope?

$$m = 4x + 8$$