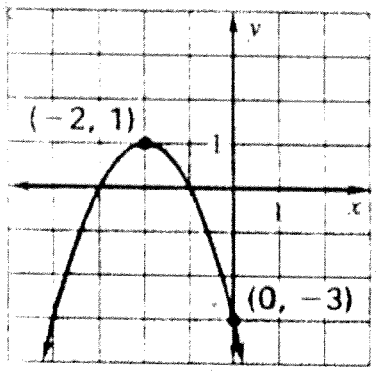
# Writing Quadratic Functions HOMEWORK

Name Key

Date _____ Block _____

***Write a quadratic function in <u>vertex form</u> for the graph shown.***

1.




$y = a(x+2)^2 + 1$

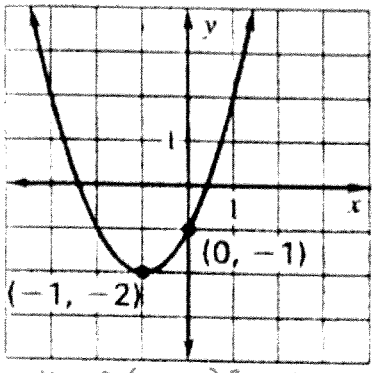
$-3 = a(0+2)^2 + 1$

$-3 = 4a + 1$

$-4 = 4a \rightarrow a = -1$

$y = -(x+2)^2 + 1$

2.




$y = a(x+1)^2 - 2$

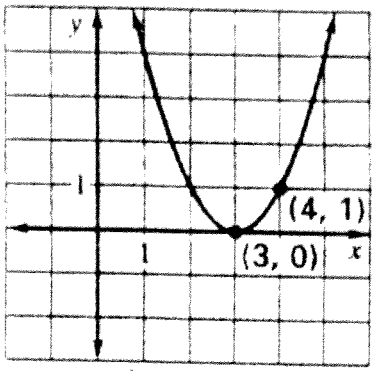
$1 = a(0+1)^2 - 2$

$-1 = a - 2$

$1 = a$

$y = (x+1)^2 - 2$

3.




$y = a(x-3)^2 + 0$

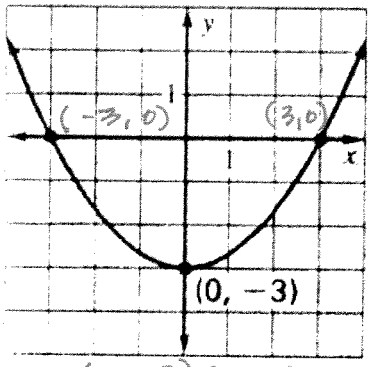
$1 = a(4-3)^2$

$1 = a$

$y = (x-3)^2$

***Write a quadratic function in <u>intercept form</u> for the graph shown.***

4.



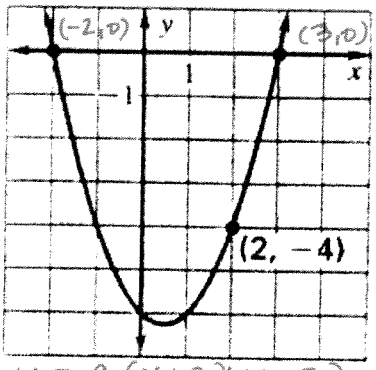

$y = a(x+3)(x-3)$

$-3 = a(0+3)(0-3)$

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

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

5.




$y = a(x+2)(x-3)$

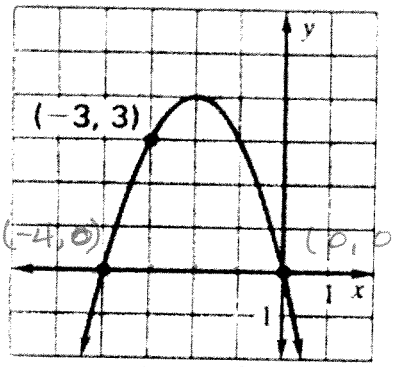
$-4 = a(2+2)(2-3)$

$-4 = -4a$

$a = 1$

$y = (x+2)(x-3)$

6.




$y = a(x-0)(x+4)$

$y = a \cdot x \cdot (x+4)$

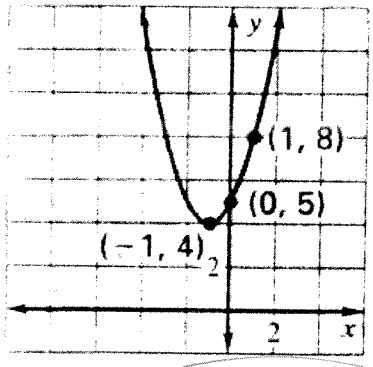
$3 = a(-3)(-3+4)$

$3 = -3a \rightarrow a = -1$

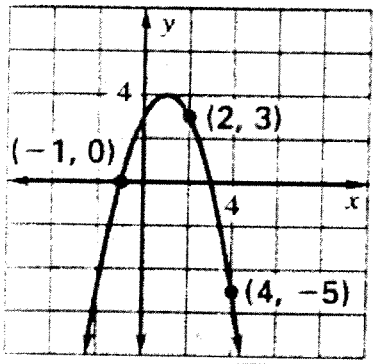
$y = -x(x+4)$

***Write a quadratic function in <u>standard form</u> for the graph shown.***

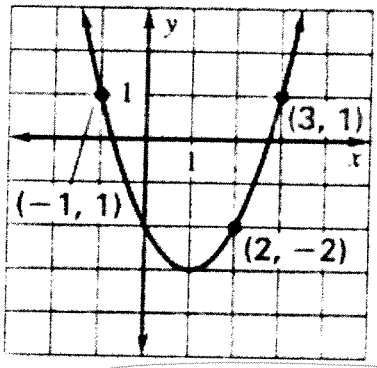
7.




8.




9.




$y = x^2 + 2x + 5$

$y = -x^2 + 2x + 3$

$y = x^2 - 2x - 2$

⑦ ⑧ ⑨ On GDC (calc)

STAT > Edit:

x-values $L_1$

y-values $L_2$

} STAT > calc > QuadReg.

Who am I??

***Write the function for each quadratic described in standard form.***

**10.** I have zeros at -1 and -3 and the point (-2, -5)

$y = a(x+1)(x+3)$

$-5 = a(-2+1)(-2+3)$

$-5 = -a$

$a = 5$

$y = 5(x+1)(x+3)$

$y = 5(x^2+4x+3)$

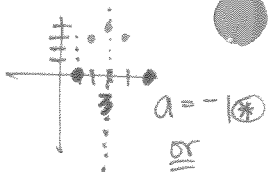
$y = 5x^2+20x+15$

**11.** I have zeros at 1 and 5 and the equation of my axis of symmetry is x = 3. *

$y = a(x-1)(x-5)$

$y = (x-1)(x-5)$

$y = x^2-6x+5$ *



$a = -1$ *

or

$a = 1$ *

* There are many values of 'a' that would yield a function that has the given roots and axis of symmetry

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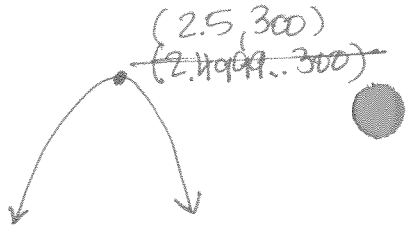
**12: Use a calculator to answer each question. Round decimals to the nearest hundredth.**

***An object is fired straight up from the top of a 200 foot tower at a velocity of 80 feet per second. The height h(t) of the object t seconds after firing is given by $h(t) = -16t^2 + 80t + 200$.***

**a.** What is the y-intercept? What is the meaning of the y-intercept in the context of this problem?

(0, 200)




**b.** What was the maximum height reached by the object?

300 feet

**c.** When did the object reach its maximum height?

2.5 seconds after fired

**d.** How high would the object be after 3.2 seconds?

$h(3.2) = -16(3.2)^2 + 80(3.2) + 200$

$h(3.2) =$ 292.16 feet

**e.** When did the object reach 100 feet?

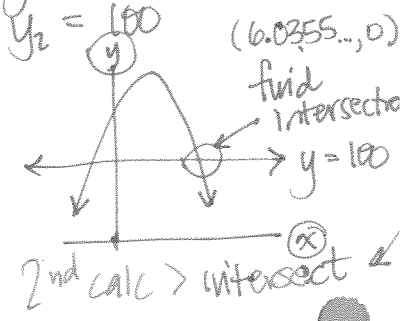
$100 = -16t^2 + 80t + 200$

6.4 seconds after fired

on GDC:

$y_1 = -16x^2 + 80x + 200$

$y_2 = 100$




**f.** When did the object hit the ground?

6.83 seconds after fired