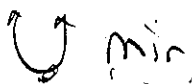


Properties of the Graph of a Quadratic Function Algebra 1 Homework

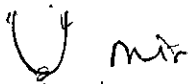
Skills

1. For each of the following, identify if the vertex is a maximum or minimum.

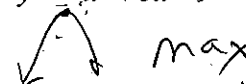
(a) $y = 2x^2 - 3x + 1$



(b) $y = 3x^2 - 2x + 7$



(c) $y = -x^2 + 5x - 9$



2. Write the following quadratic functions in standard form. $ax^2 + bx + c$ (DPO)

(a) $y = 2x - 1 + 3x^2$

$y = 3x^2 + 2x - 1$

(b) $y = -2x - x^2 + 5$

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

(c) $y = 2x^2 + 5 - 3x$

$y = 2x^2 - 3x + 5$

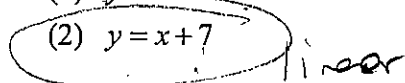
3. Which of the following equations does not represent a quadratic function?

(1) $y = 3x^2 - 7$

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

(2) $y = x + 7$

(4) $y = -x^2 + 7x + 9$



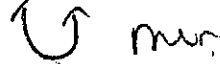
x^2

4. Given the function $y = 5 - 6x + x^2$

(a) Write the function in standard form.

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

(b) Is the turning point a maximum or minimum?

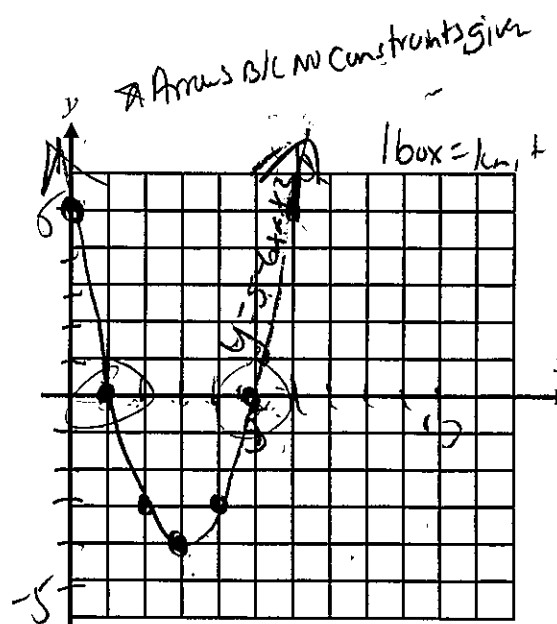


(c) Graph the function by setting up a table on the calculator.
Show your table in the space below.

| X | Y |
|---|----|
| 0 | 5 |
| 1 | 0 |
| 2 | -3 |
| 3 | -4 |
| 4 | -3 |
| 5 | 0 |
| 6 | 5 |

(d) Find all x-intercepts.

$x = 1$
 $x = 5$



Graphing Quadratic Functions with the Graphing Calculator

Algebra 1 Homework

Continued

Skills

For problems #1-3, determine: (a) the axis of symmetry, (b) the coordinates of the vertex, (c) whether the vertex is a maximum or a minimum.

1. $y = 2x^2 - 8x + 7$
 $a: 2$
 $b: -8$
 $X = \frac{-b}{2a} = \frac{-(-8)}{2(2)} = \frac{8}{4} = 2$
 $Y = 2(2)^2 - 8(2) + 7 = 8 - 16 + 7 = -1$
 Vertex: $(2, -1)$ Min

2. $y = -2x^2 + 3x - 5$
 $X = \frac{-b}{2a} = \frac{-3}{2(-2)} = \frac{3}{4}$
 $Y = -2(\frac{3}{4})^2 + 3(\frac{3}{4}) - 5 = -\frac{9}{8} + \frac{9}{4} - 5 = \frac{-9 + 18 - 40}{8} = -\frac{31}{8} = -3.875$
 Vertex: $(\frac{3}{4}, -3.875)$ Max

3. $y = 4x + 2x^2 - 5$
 $y = 2x^2 + 4x - 5$
 $X = \frac{-b}{2a} = \frac{-4}{2(2)} = -1$
 $Y = 4(-1) + 2(-1)^2 - 5 = -4 + 2 - 5 = -7$
 Vertex: $(-1, -7)$ Min

4. Which of the following equations has a graph that is narrower than the graph of $y = 3x^2 + 5$?

(1) ~~$y = -3x^2 + 5$~~

(2) ~~$y = -2x^2 + 9$~~

(3) ~~$y = -0.5x^2 + 3$~~

(4) $y = 4x^2 + 6$

$3(x+2)^2$
 $x > 1$

5. Which of the following are the coordinates of the vertex of $y = x^2 - 4x + 5$?

(1) $(2, 1)$

(2) $(-2, 17)$

(3) $(4, 5)$

(4) $(0, 5)$

$X = \frac{-b}{2a} = \frac{-(-4)}{2(1)} = \frac{4}{2} = 2$

6. Which of the following points is not on the graph of $y = 2x^2 - 7$?

(1) ~~$(-1, -5)$~~

(2) $(3, 25)$

(3) ~~$(0, -7)$~~

(4) ~~$(1, -5)$~~

$25 = 2(3)^2 - 7$

$25 = 2 \cdot 9 - 7$

$25 = 18 - 7$

$25 \neq 11$

7. Which parabola has a turning point at $(2.5, 6.25)$?

(1) ~~$y = -x^2 - 4x$~~

(2) ~~$y = -x^2 + 4x$~~

(3) ~~$y = -x^2 - 5x$~~

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

$X = \frac{-b}{2a} = \frac{-(-4)}{2(-1)} = 2$

$X = \frac{-(-4)}{2(-1)} = 2$

$X = \frac{-(-5)}{2(-1)} = 2.5$

$X = \frac{-4}{2} = -2$

$X = \frac{-4}{2} = -2$

$X = \frac{-5}{2} = -2.5$

$X = \frac{-b}{2a}$

$X = \frac{-(-5)}{2(-1)} = 2.5$

$X = \frac{-5}{-2} = 2.5$