

Math 10: The Art and Practice of Mathematics
Assignment 5
Due Wednesday March 21

Your solutions should be written so-as to be clear to an audience of fellow math 10 students.

1. For each quadratic equation below, determine the (x, y) -coordinates of the vertex and make a rough sketch of the graph.

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

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

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

2. For each quadratic equation below, (i) find the critical point using the critical point formula $x = \frac{-b}{2a}$, (ii) find the critical value by plugging the x -value from (i) into the given formula for y , (iii) make a rough sketch of the graph.

(a) $y = -x^2 + 6x - 10$

(b) $y = -x^2 + 20x - 104$

(c) $y = -x^2 + 7x - (7/2)^2$

(d) $y = -2x^2 + 12x - 17$

(e) $y = -2x^2 - 12x - 15$

3. Determine the (x, y) -coordinates where the lines determined by each pair of equations cross.

(a) $y = 3x - 2, x = 5y + 7$

(b) $y = 2x + 5, x = 7y + 3$