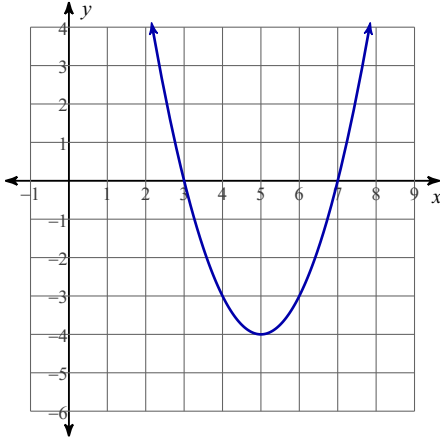
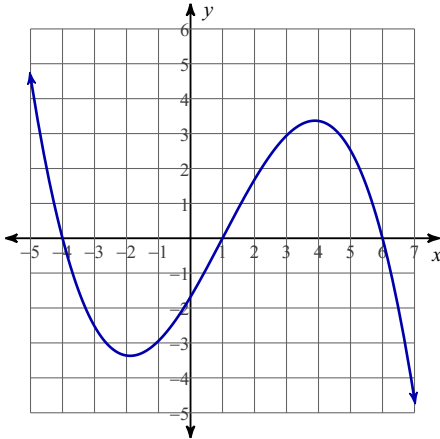


SM3 HW #4-1 (Unit 1 and 2 Weak Areas, Part-1)

- 1) If applicable, give your answers in Interval Notation
 - a) Where is the function increasing?
 - b) Where is the function decreasing?
 - c) Where is the function positive?
 - d) Where is the function negative?
 - e) Where is the value of the function equal to zero?
 - f) What is the intercept form equation of the graph?
 - g) What is the vertex form equation of the graph?
 - h) What is the standard form equation of the graph?



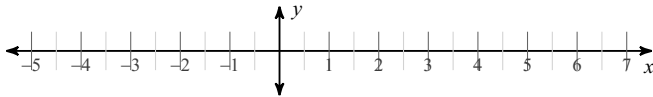
- 2) If applicable, give your answers in Interval Notation
 - a) Where is the function decreasing?
 - b) Where is the function increasing?
 - c) Where is the function negative?
 - d) Where is the function positive?
 - e) Where is the value of the function equal to zero?
 - f) Assuming VSF = 1, write the intercept form equation of the graph.
 - g) Convert your equation to standard form.



- 3) Why does a graph neither increase nor decrease at the vertex of a parabola or at local or absolute minimums and maximums?

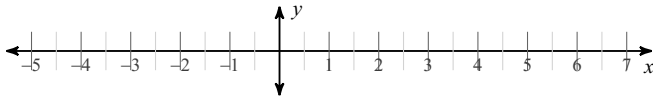
4) Graph the following intervals;

$$x = (-\infty, 2) \cup (5, 7]$$



5) Graph the following intervals;

$$x = (-3, 1] \cup (4, 6]$$



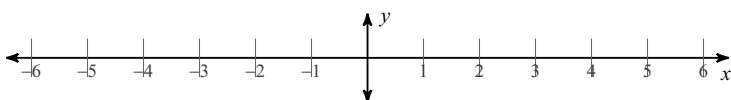
6) What is a "multiplicity"?

Write the equation of a polynomial (in intercept form) whose zeroes are:

$$x = -4 \text{ (mult. 1), } 0 \text{ (mult. 2), } 3 \text{ (mult. 4)}$$

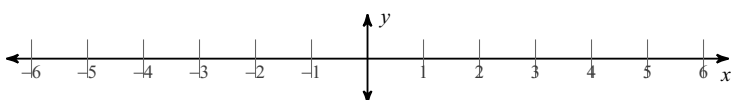
7) Draw the general shape of the following polynomial. Make sure you label your x-axis with the correct zeroes.

$$f(x) = -2(x + 4)(x + 2)(x - 1)(x - 3)$$



8) Draw the general shape of the following polynomial. Make sure you label your x-axis with the correct zeroes.

$$f(x) = 4x^2(x + 3)^3(x - 2)(x - 3)$$



9) $y = 6x^2 - 11x + 4$

- a) Convert the equation into intercept form.
SHOW YOUR WORK.
- b) List the zeroes of the equation.

10) $y = 5x^2 - x - 6$

- a) Convert the equation into intercept form.
SHOW YOUR WORK.
- b) List the zeroes of the equation.

11) $y = 8x^2 + 10x - 3$

- a) Convert the equation into intercept form.
SHOW YOUR WORK.
- b) List the zeroes of the equation.

12) $y = 6x^2 - 11x + 3$

- a) Convert the equation into intercept form.
SHOW YOUR WORK.
- b) List the zeroes of the equation.

13) Convert the intercept form equation to vertex form.

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

14) Convert the intercept form equation to vertex form.

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

15) Convert the intercept form equation to vertex form.

$$y = -(x + 2)(x - 6)$$

16) Convert the intercept form equation to vertex form.

$$y = (x + 5)(x - 11)$$

17) Find the zeroes:

$$y = 8x^2 + 39$$

18) Find the zeroes:

$$49x^2 + 10 = 19$$

19) Find the zeroes (SHOW YOUR WORK).

$$y = -3(x - 2)^2 - 9$$

20) Find the zeroes (SHOW YOUR WORK).

$$y = 2(x + 4)^2 - 48$$