2.7 and 3.1 HW
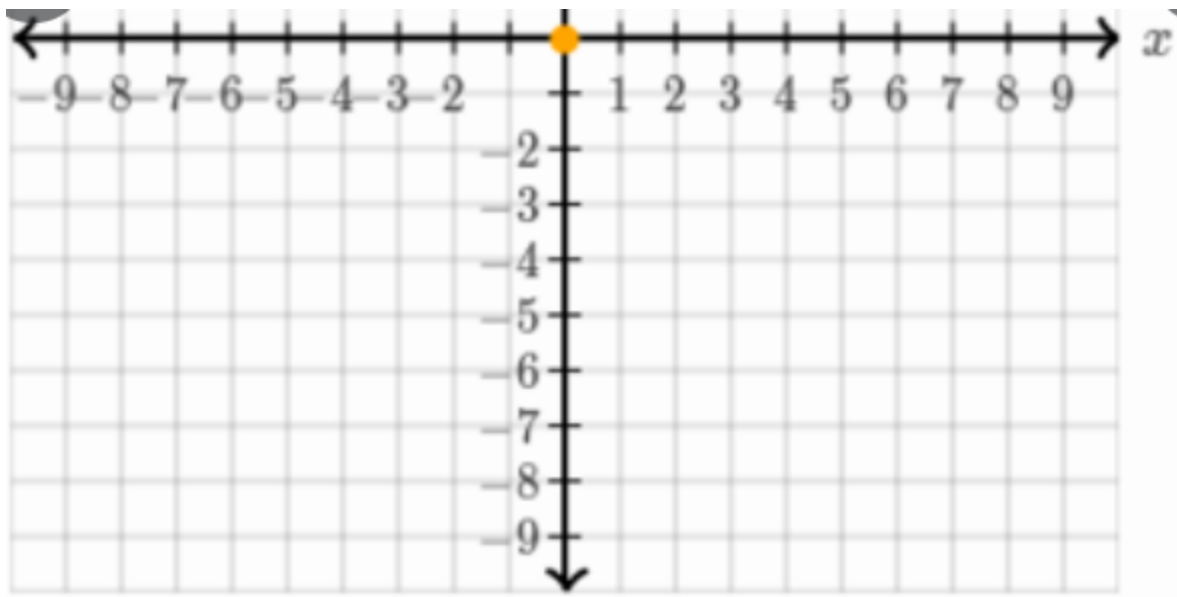
1.   Find the solution(s) of the system algebraically (Factoring or Quadratic Formula)

$y = x^2 - 3$
$y = -2x + 4$

2.   Find the solution(s) of the system graphically

$$\begin{cases} y = -\frac{1}{2}x^2 \\ y = x - 4 \end{cases}$$

3.   Nate tosses a ball up a hill for his dog to chase. The path of the ball is modeled by the function $y = -.25x^2 + 6.6x$, where x is the ball's horizontal distance from Nate in feet and y is the ball's height in feet. The hill is modeled by the line $y = .2x$. How far does the ball travel horizontally before it hits the ground? (Hint: Use your calculator to graph the functions and find where they intersect each other)

Solve the system of inequalities $\begin{cases} y \geq 2x^2 + 2x - 3 \\ y \leq \frac{1}{3}x + 6 \end{cases}$ using shading.

Which of the following statements is true of the polynomial $x^2 + 6x^3 - 4 + 2x^5$?

○   A.   The degree of the polynomial is 1.

○   B.   The leading coefficient of the polynomial is 1.

○   C.   The polynomial in standard form is $2x^5 + 6x^3 + x^2 - 4$.

○   D.   The polynomial is a trinomial.

5.   Use the leading coefficient and degree of the polynomial function $f(x) = x^3 - 7x^2 + 10x$ to determine the end behavior of its graph.

6.   Use the graph to answer the questions:
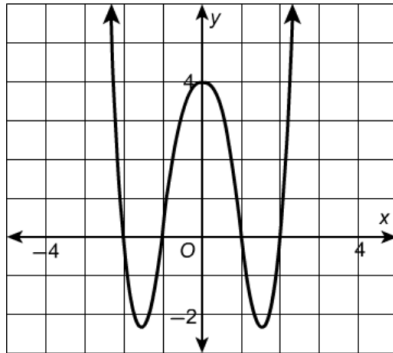
a) Find the end behavior.

b) Find the Average Rate of Change on the interval [0, 2]

c) Find the intervals of increase and decrease

d) Find the interval when f(x) > 0

e) Find the interval when f(x) < 0

f) Find the x-intercepts

g) Find any relative maximum(s) and minimum(s)

h) Determine the degree of the polynomial

The graph of a function f is shown below. Use the zeros and the local maximums of the graph to find the rule for f.