Pre-Calculus 30

Outcome 3b Graphing Polynomials

30.10	2	3	4
Outcome 3b: I can demonstrate understanding of polynomial functions of degree higher than 2 by graphing	Identify Polynomial functions and their characteristics. Match a polynomial function with its graph based on degree, end behavior, number of x intercepts Given a graph determine the least possible degree, sign of leading coefficient, x intercepts, intervals where functions is positive and negative Analyze factored equations to sketch polynomial functions	Analyze Equations to sketch Polynomial functions	Solve problems Explain relationships between zeros and roots.

Level 2

1. Which of the following are polynomial functions?

   a) $h(x) = \frac{1}{x+2}$

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

   c) $y = 2x^{\frac{1}{2}} + x$

   d) $y = \sqrt{x} + 4$

2. Identify the degree, leading coefficient, and constant of the polynomial function.

$$g(x) = -3x^3 + 2x^2 - 7$$

Degree:

Leading Coefficient:
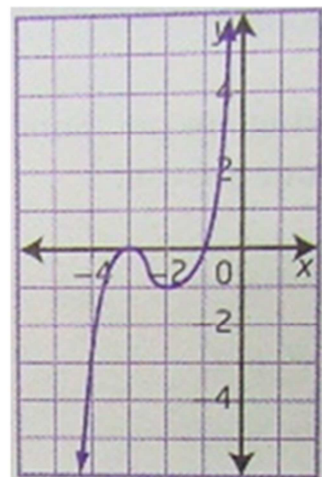
Constant:

3. Given the graph:

Odd or even degree:

Sign of Leading coefficient:
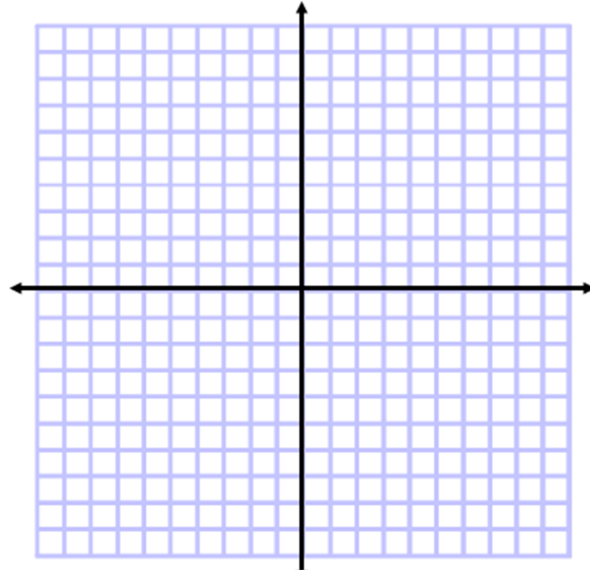
Number of x intercepts:

Intervals where the function is positive:
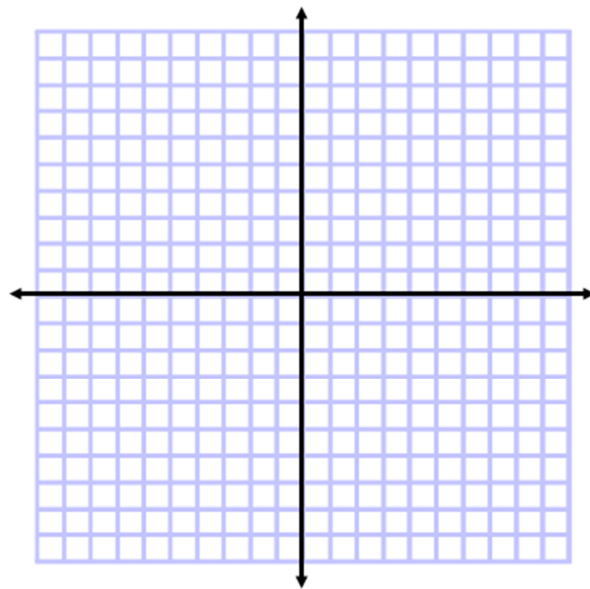
Intervals where the function is negative:

4. Sketch the graph of each polynomial function. The functions have already been factored for you.
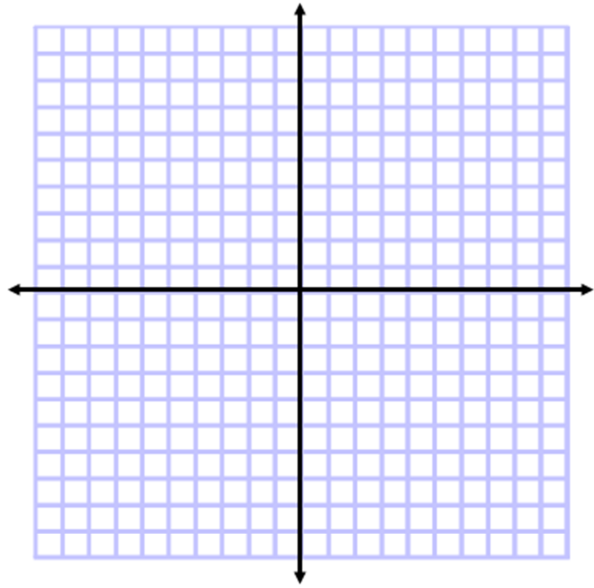
a) $y = x^2(x-2)^3$

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

Level 3

5. Sketch the graph of the polynomial function $y = x^3 - 4x^2 + x + 6$. Label all intercepts.

Level 4

6. How can you tell from a graph if the multiplicity of a zero is 1, and even number, or an odd number greater than 1?