1. Identify the following functions and the function that represents their rate of change.
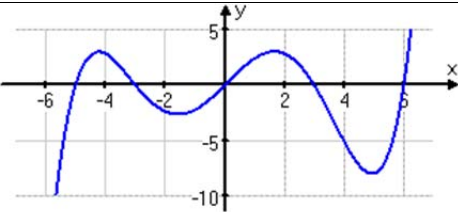
X	Y
1	8
2	11
3	14
4	17

X	Y
1	8
2	15
3	34
4	71

X	Y
1	8
2	24
3	72
4	216

_____   _____   _____

ROC _____   _____   _____
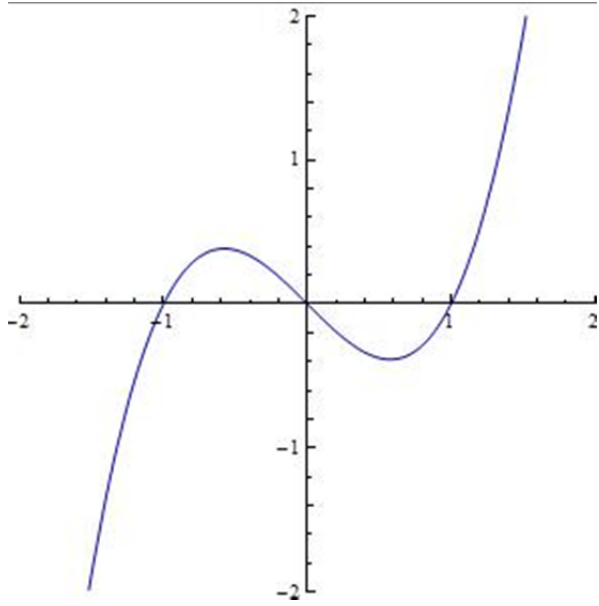
2. A) Factor $3x^3 - 81$

   B) State how many real roots.

3. Fill in the blank for all of the following.

a. $f(x) = \frac{1}{3}^x - 2$	b. f(x) = 3 - x^7	c. f(x) = $3x^2 + 2x^3 - x^4$
$x \to \infty \ f(x) \to$ _____ $x \to -\infty \ f(x) \to$ _____	$x \to \infty \ f(x) \to$ _____ $x \to -\infty \ f(x) \to$ _____	$x \to \infty \ f(x) \to$ _____ $x \to -\infty \ f(x) \to$ _____
d. $f(x) = 2^{x-1} + 1$ $x \to \infty \ f(x) \to$ _____ $x \to -\infty \ f(x) \to$ _____		e. $x \to \infty \quad f(x) \to$ _____ $x \to -\infty \ f(x) \to$ _____

4. Identify all **zeros and factors**.

5. Given $f(x) = x^3 + 2x^2 - 3x + 5$ and $g(x) = -2x^2 + 6x - 3$.
a. Find $f(x) - g(x)$

6. Prove that x = 2 is a root of $x^3 - 6x^2 - 4x + 24$.