Activity #4: Functions   **College Algebra**

1. Find the domain of the following function.

$$f(x) = \frac{7x^3 + x^2 + x + 8}{x^2 - x - 2}$$

2. Find the domain of the following function.

$$g(x) = \frac{1}{x^3 + 4x^2 - 45x}$$

3. Find the domain of the following function.

$$f(x) = \sqrt{5x + 8}$$

4. Find the domain of the following function.

$$f(x) = \sqrt{|6x + 6| - 8}$$

5. Evaluate the function

$$f(x) = 4x^3 + 6x + 2$$

at $x = 2$, $x = 0$, $x = -3$, and $x = 1/2$.

6. Evaluate the function

$$f(x) = \begin{cases} 3x - 4 & \text{if } x \geq 4 \\ \frac{1}{x^2 - 3} & \text{if } x < 4 \end{cases}$$

at $x = 1$, $x = 9$, and $x = -7$.

7. Find all solutions of the following inequality.

$$|3x - 4| + 5 \geq 16$$