Names: _____ _____ _____

Activity #6: Rational Functions **College Algebra**

1. Find the domain of the following rational function.

$$f(x) = \frac{x^2 + 3x + 2}{x^3 + x^2 - 4x - 4}$$

2. Find the long-term behavior asymptote of the following rational function.

$$f(x) = \frac{x^3 + 2x^2 - 9x - 18}{x - 6}$$

3. Consider the following rational function.

$$f(x) = \frac{(x-1)^3(x-2)^7(x-3)^1}{(x-1)^4(x-2)^1(x-3)^4}$$

For each point c not in the domain of f, determine whether f has a hole or a vertical asymptote at c.

4. Find the long-term behavior and vertical asymptotes of the rational function

$$f(x) = \frac{x^5 - 3x^4 - 17x^3 + 27x^2 + 52x - 60}{x^3 + x^2 - 4x - 4}.$$