Names: _____ _____ _____

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

1. Find the domain of the following rational function.

$$f(x) = \frac{x^2 - 4}{x^3 - 5x^2 + 8x - 4}$$

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

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

3. Consider the following rational function.

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

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

$$f(x) = \frac{x^5 - 10x^4 + 25x^3 + 20x^2 - 116x + 80}{x^3 - 4x^2 + x + 6}.$$