Name: _____

Score: _____ /15

Homework 6 (Due Wed, May 21)

Math 1060Q – Summer 2014
Professor Hohn

Answer the following questions.

1. Suppose $p(x) = 5 - 3x^2$ and $q(x) = 4x + 6x^5$.
   (a) What is the degree of p?

   (b) What is the degree of q?

   (c) Write a formula for pq.

   (d) What is the degree of pg?

2. Explain why the polynomial p defined by $p(x) = x^2 + 1$ has no (real) zeros.

3. Find a polynomial p of degree 3 such that $-1, 2, 5$ are zeros of p and $p(0) = 1$.

4. Find a polynomial p of degree 5 such that $0, 3, -2, 9$ are zeros of p and $p(1) = -4$.

5. Suppose

$$r(x) = \frac{2x}{x^2 - 1} \qquad s(x) = \frac{3x + 2}{x^2 + 1}$$

   (a) Write $r + s$ as a ratio of two polynomials.

(b) Write $\left(\frac{r}{s}\right)$ as a ratio of two polynomials.

6. Suppose

$$r(x) = \frac{x^5 + 3x^4 - 6}{2x^2 - 5}.$$

(a) Write the domain of $r(x)$ in interval notation.

(b) Find the asymptotes of the graph of $r(x)$.

7. Suppose

$$r(x) = \frac{3x+1}{x^2+x-2}.$$

(a) Write the domain of $r(x)$ in interval notation.

(b) Find the asymptotes of the graph of $r(x)$.

8. Suppose

$$r(x) = \frac{-2x^2+1}{x^2-5x-6}.$$

(a) Write the domain of $r(x)$ in interval notation.

(b) Find the asymptotes of the graph of $r(x)$.