## **Review Problems**

## September 16, 2016

- 1. (Fall 2002, Exam 1, #6) Find the slope of the tangent line to the graph of  $y = \frac{1}{x+1} (x \neq -1)$  at the point with x-coordinate x = 2.
- 2. (Fall 2002, Exam 1, #7) Let  $f(x) = \sqrt{2+x}$ .
  - (a) What is the domain of f?
  - (b) Find f'(x), the derivative of f at x.
- 3. (Fall 2005, Exam 1, #6) Determine the total number of vertical and horizontal asymptotes for  $f(x) = \frac{x^2 + 4x + 4}{x^2 + 3x + 2}$ .
- 4. (Fall 2005, Exam 1, #7) Let  $f(x) = x^2 + cx$ . Determine c so that f'(1) = 0.
- 5. (Fall 2006, Exam 1, #11) Evaluate  $\lim_{x \to -\infty} \sqrt{\frac{1 4x^2 + 7x^3}{28x^3 \pi x + e}}$ .
- 6. Find the total number of asymptotes, vertical and horizontal, for the graph of  $f(x) = \frac{x-2}{\sqrt{2x^2+7x+3}}$ .
- 7. (Fall 2006, Exam 1, #13) If a ball is thrown directly up from the ground with a velocity  $v_0$ , then its height above the ground at time t is given by  $H(t) = v_0 t \frac{g}{2}t^2$  until it falls back to the ground. Here g is the acceleration of gravity. Find the velocity of the ball when it hits the ground.
- 8. (Fall 2006, Exam 1, #14)  $f'(a) = \lim_{h \to 0} \frac{32(2^h 1)}{h}$  represents the derivative of a certain function f at a number a in its domain. Determine f and a.
- 9. (Fall 2006, Exam 1, #15) If r + 3s + 1 = 0 is the tangent line to r = g(s) at (-1, 2), find g(-1) and g'(-1).