Name _____

Homework 7
section 1.8

1. (4) Examine the following limits by substituting in values closer and closer to 0 (i.e. create tables). Determine the value of the limits accurate to 4 decimal places. Can you guess their exact values?

   i) $\lim_{x\to 0} \dfrac{e^{2x}-1}{x}$

   ii) $\lim_{h\to 0} (1+h)^{1/h}$

2. (6) Given $\lim_{x\to 3} f(x) = 4$, $\lim_{x\to 3} g(x) = -2$ and $h(3) = 5$, compute the following, if possible. Show your use of the properties of limits. If it is not possible to compute one of the following, explain why not.

   (a) $\lim_{x\to 3} (xf(x))$

   (c) $\lim_{x\to 3} (h(x)f(x))$

   (b) $\lim_{x\to 3} \dfrac{(g(x))^2}{f(x)}$

   (d) $\lim_{x\to 3} (f(x)+2)$

3. (5) Find a value of the constant k so that the following limit exists.

$$\lim_{x \to 2} \frac{x^2 - kx + 6}{x - 2}$$

4. (5) Use algebraic manipulations to find the limit, if it exists.

$$\lim_{x \to \infty} \frac{3x^2 + 5x + 1}{5x^2 - 4}$$