Quiz # 7— 11/6/14

Answer all questions in a clear and concise manner. Remember that answers without explanation or that are poorly presented may not receive full credit.

1. Calculate the limit of
$$\lim_{x \to 0} \frac{\sin(2x)}{\sin(7x)}$$

2. Describe the local maxima, local minima, and intervals of concavity of
$$f(x) = x + \frac{1}{x}.$$

3. Assume that $g(x)$ is a differentiable function and that $-1 \leq g'(x) \leq 2$ for all values of x. Use the mean value theorem to find the largest possible value for $g(3)$ if $g(0) = 1$.