MATH 166
SUMMER 2011
QUIZ 1 (REVIEW)

Each problem is worth 5 points.

1. Find the derivative for each of the following functions.

   a) $f(x) = \sin(x^3 + x)e^{-x^2}$ b) $g(x) = \dfrac{x\ln(x)}{\tan(x)+1}$ c) $h(x) = x^{\sin(x)}$

   d) $k(x) = \sec(\sqrt{x + \sqrt{\ln(x^2+1)+1}})$

2. Evaluate the following limits.

   a) $\lim\limits_{x\to 0} \dfrac{\sin(3x)}{\tan(5x)}$ b) $\lim\limits_{x\to\infty} \dfrac{x+\sin(2x)}{3x}$ c) $\lim\limits_{x\to-\infty} \dfrac{x}{\sqrt{x^2+1}}$

   d) $\lim\limits_{x\to\infty} (1+\dfrac{1}{x})^x$

3. Evaluate the following integrals.

   a) $\displaystyle\int_1^x \frac{1}{t}dt, x > 0$ b) $g(x) = \displaystyle\int x^2\sin(x^3+2)dx$ c) $\displaystyle\int 2x^3\sqrt{x^2+1}dx$

   d) $\displaystyle\int \frac{\cos(x)}{\sin^2(x)+1}dx$