

MATH 125 EXAM II

Take-home. Due Wed. 12 Dec 2001, 8 a.m.

1) Extremize the functions

$$\bullet y = \sqrt{x-1} + \sqrt{3-x}$$

$$\bullet y = -\ln(x^2 + 1)$$

$$\bullet y = e^{x^2+1}$$

$$\bullet y = x \ln(x)$$

$$\bullet y = \ln \sqrt{\frac{2}{2x^2+3}}$$

2) Determine the following limits:

$$\bullet \lim_{x \rightarrow 0} \frac{\sin px}{\sin qx}$$

$$\bullet \lim_{x \rightarrow 0} \frac{\cos px}{\cos qx}$$

$$\bullet \lim_{x \rightarrow 0} \frac{\tan px}{\sin qx}$$

$$\bullet \lim_{x \rightarrow 0} \frac{\tan px}{\tan qx}$$

$$\bullet \lim_{x \rightarrow \infty} \frac{\ln \ln(x)}{\ln(x)}$$

$$\bullet \lim_{x \rightarrow \infty} \sqrt[x]{x^p}$$

$$\bullet \lim_{x \rightarrow -\infty} x e^x$$

3) From Stewart's book, do problems 30 (you will probably need *Maple*), 37, and 42.