

MTH 121 — Fall — 2004  
Essex County College — Division of Mathematics  
Quiz # 6<sup>1</sup> — October 21, 2004

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Show all work clearly and in order, and box your final answers. Justify your answers algebraically whenever possible. You have 20 minutes to take this 10 point quiz. When you do use your calculator, sketch all relevant graphs and write down all relevant mathematics.

1. Differentiate  $f(x) = \frac{1-\sin x}{x+\cos x}$ .

Solution:

$$f'(x) = \frac{(x + \cos x) - (1 - \sin x)(1 - \sin x)}{(x + \cos x)^2} = \frac{(x + \cos x) - (1 - \sin x)^2}{(x + \cos x)^2}$$

2. Differentiate  $f(x) = \frac{x}{\cos x} - x^2$ .

Solution:

$$f'(x) = \frac{\cos x + x \sin x}{\cos^2 x} - 2x = \frac{\cos x + x \sin x - 2x \cos^2 x}{\cos^2 x}$$

3. Differentiate  $f(x) = x \sin x$ .

Solution:

$$f'(x) = x \cos x + \sin x$$

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<sup>1</sup>This document was prepared by Ron Bannon using L<sup>A</sup>T<sub>E</sub>X.