

M124 Calculus I
Midterm II
Nov. 19, 2002

Name: _____

Student Id: _____

Section: _____

1. Compute the following:

a) (10pts) $\frac{d}{d\theta} \left(\frac{\theta}{\sin \theta + \cos \theta} \right)$.

b) (10pts) $\frac{d}{dx} e^{-x^2}$.

c) (10pts) $f'(s)$ with $f(s) = \tan^{-1} \left(\frac{1+s}{1-s} \right)$.

d) (15pts) y' with $y = (1+x)^{\frac{1}{x}}$.

e) (15pt) $\frac{dy}{dt}$ with $y = \sqrt{(1+t)(1+t^2)(1+t^3)}$.

2. (20pts) Find the tangent line to the curve (folium of Descartes) $(x + 1)^3 + y^3 = 6(x + 1)y$ at $(2, 3)$.

3. (20pts) A particle is moving back and forth the coordinates line, its position at each time t is given by $y(t) = t \sin t$. Find the position, velocity, and acceleration at $t = \pi$.