

MAT 1339 A Assignment 3 (Due THU. NOV. 11th, 11:30) Student Number:

Name:

Problem 1: Find the equation of the tangent line to the graph of $f(x) = \cos(e^{x-5} - 1) + x$ at the point $(5, 6)$. Hint: Recall that such an equation has the form $y = mx + n$. What is the meaning of m ? Find m and n .

Work:

Problem 2: Using the rules of differentiation find the derivative of (i) $89^{7x-2010}$;

(ii) $37^{37x-x^2} e^{2x}$;

(iii) $\frac{88^{2x}}{38^{4x}}$.

Hint: do not simplify!

Work:

Problem 3: Superwoman is pulling a batmobile from a ditch. The tension in the cable is $20000N$ at an angle of 40 degrees to the horizontal. Find the magnitudes of the vertical and horizontal components of the force.

Work:

Problem 4: What is the magnitude of $\frac{(3\vec{v} + \vec{u}) - \vec{v} - \vec{v} - \vec{v}}{4|\vec{u}|}$ for any non-zero vectors \vec{u} and \vec{v} ?

Work:

Problem 5: In a hexagon $ABCDEF$, opposite sides are equal and parallel, and moreover $2\vec{AB} = \vec{FC}$. Express \vec{BF} in terms of \vec{FA} and \vec{BA} . Hint: draw a picture!

Work: