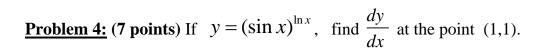
Serial No.: Student Name:		Student Number:
Instructor: M. Z. Abu-Sbeih	Math 101- O3	Date: 8-7-2014

## Show all your work. No credits for answers not supported by work.

**Problem 1:** (7 points) Find all points on the graph of  $y = \frac{4x}{x^2 + 1}$ , where the tangent line is horizontal.

**Problem 2:** (7 points) If  $y = \tan^5(\sin^3(x^7 - 1))$  find  $\frac{dy}{dx}$ .

**Problem 3:** (7 points) Find the equation of the line tangent to the curve  $2x + \sin(xy) = e^y - 1$  at the point (0,0)



**Problem 5:** (7 points) Find the slope of the line(s) tangent to the curve  $y = x^2 + 7$  and passes through the point (3,0).

**Problem 6:** (7 points) Find the limit if it exists  $\lim_{\theta \to \pi/3} \frac{\sec \theta - 2}{\theta - \pi/3}$