MATH 101
QUIZ 4

Name: **Serial No.** **section:**

1. Given $f(x) = x(1-3x)^{2/3},\ 0 \le x \le 3$

   a) Find all critical numbers of $f(x)$.

   b) Find the absolute maximum and the absolute minimum of $f(x)$.

2. Using differentials (or linear approximation). Approximate the value of $\sqrt{80.9}$.

3. Two sides of a triangle are 4 m and 5 m in length and the angle between them is increasing at rate of 0.06 rad/s. Find the rate at which the area of the triangle is increasing when the angle between the sides of fixed length is $\frac{\pi}{3}$

4. Calculate $\frac{d}{dx}\left[2x\sinh^{-1}(3x) - \frac{2}{3}\sqrt{1+9x^2}\right]$