

**Quiz 2****Your name:**

20 min.

**Your TA's name:**

1. [5 points] Use the Intermediate Value Theorem to show that there is a root of the equation  $x \sin x = 1$  in the interval  $\left(0, \frac{\pi}{2}\right)$ .

2. [5 points] Find an equation of the tangent line to the curve  $y = 1 + \sqrt{x}$  at the point  $(1, 2)$ . (Find a slope of the tangent line using its definition, that involves limit).

3. [5 points] Find the derivative of the function  $f(x) = \sqrt{x}(x^3 - 2) + \frac{3x - 1}{x}$   
Do NOT(!) use Quotient or Product Rules.