

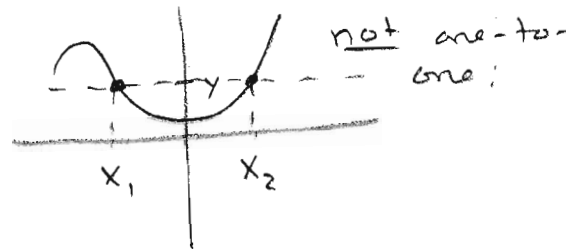
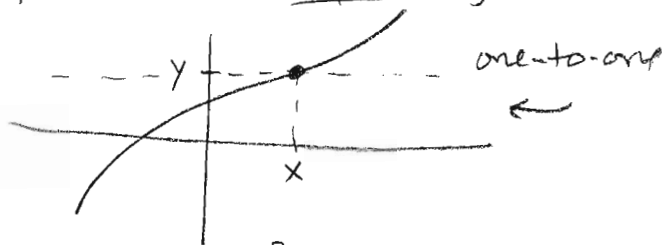
QUIZ #4
CALCULUS 140
HUNSICKER

Name _____ KEY _____ HARTLUHC _____

1) Define one-to-one function and explain in terms of graphs.

A function f is called one-to-one if it never takes on the same value twice; that is, $f(x_1) \neq f(x_2)$ if $x_1 \neq x_2$.

This means no output y corresponds to more than one input x ; so graph satisfies horizontal line test



2) Find $\frac{d^2}{dx^2} [e^{\sin x}]$

$$= \frac{d}{dx} \left[\frac{d}{dx} [e^{\sin x}] \right] = \frac{d}{dx} \left[\frac{d}{dx} [\sin x] e^{\sin x} \right]$$

$$= \frac{d}{dx} [\cos x e^{\sin x}]$$

$$= \frac{d}{dx} [\cos x] e^{\sin x} + \cos x \frac{d}{dx} [e^{\sin x}]$$

$$= -\sin x e^{\sin x} + \cos x \frac{d}{dx} [\sin x] e^{\sin x}$$

$$= -\sin x e^{\sin x} + \cos^2 x e^{\sin x}$$