

ORAL QUIZ

12/2/14

FROM
2008

1. $\frac{d}{dx} [\ln x^2] =$

2. $\lim_{x \rightarrow \infty} \frac{(2x-1)(3-x)}{(x-1)(x+3)} =$

3.

x	0	1	2	3
$f''(x)$	5	0	-7	4

Find the x -value of the point of inflection.

4. If $\sin(xy) = x$, find y'

5. If $f(2) = 1$, $f'(2) = 4$ and $f''(2) = 3$,

What is the value of the approximation of $f(1.9)$ using the TANGENT LINE of f at $x = 2$?

Bonus

If $y = \arctan(4x)$, find $y'(\frac{1}{4})$

$$1. \boxed{\frac{2}{x}}$$



$$\frac{2x}{x}$$

$$\frac{du}{1+u^2}$$

$$2. \frac{-2x^2}{x^2} = \boxed{-2}$$

Bonus

$$\frac{4}{1+16x^2}$$

$$\frac{4}{1+16\left(\frac{1}{4}\right)^2}$$

$$= \boxed{2}$$

$$3. \boxed{x=1}$$

$$4. \sin(xy) = x$$

$$\cos(xy)(xy' + y) = 1$$

$$xy' + y = \frac{1}{\cos(xy)}$$

$$y' = \frac{1}{x \cos(xy)} - \frac{y}{x}$$

$$= \frac{1 - y \cos(xy)}{x \cos(xy)}$$

$$5. (2, 1) \quad m=4$$

$$y-1 = 4(x-2)$$

$$y = 4x - 7$$

$$y(1.9) = 4(1.9) - 7$$

$$= 7.6 - 7$$

$$= \boxed{.6}$$