

Name _____

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

Find the derivative.

1) $y = \frac{10}{x} + 3 \sec x$

$10x^{-1} + 3 \sec x$

$-10x^{-2} + 3 \sec x \tan x$

$-\frac{10}{x^2} + 3 \sec x \tan x$

2) $y = \frac{8}{\sin x} + \frac{1}{\cot x}$

The answer is $-8 \csc x \cot x + \sec^2 x$
 Show me how to get there.

~~$8 \frac{-8 \cos x}{\sin^2 x} + \sec^2 x$~~

rewritten

$$8 \csc x + \tan x$$

$$-8 \csc x \cot x + \sec^2 x$$

Find the indicated derivative.

3) Find y'' if $y = 7 \sin x$.

$$7 \cos x$$

$$-7 \sin x$$

Solve the problem.

4) Find the tangent to $y = 2 - \sin x$ at $x = \pi$.

$y(\pi) = 2$

$y' = -\cos x$

$y'(\pi) = -\cos(\pi) = 1$

$$y - 2 = x - \pi$$

5) Does the graph of the function $y = \tan x - x$ have any horizontal tangents in the interval $0 \leq x \leq 2\pi$? If so, where?

$\sec^2 x - 1 = 0$

$\cos x = -1$ $\cos x = 1$

$\sec^2 x = 1$

$x = \pi$ and $x = 0$

$\cos^2 x = 1$