

Math 201 Quiz 7A

October 7, 2019

Name: _____

Instructions: No calculators. Use your own scrap. Write your fully simplified answers in the space provided.

1. Use the limit definition of the derivative to find $f'(x)$ if $f(x) = \cos x$. Show your work below.

2. Hence, by the above, find the equation of the tangent line to $f(x)$ at the point where $x = \frac{\pi}{4}$.

$y =$ _____

3. Complete the following rules/computations:

(a) $\frac{d}{dx} f(g(x)) =$ _____ (b) $\frac{d}{dx} (f(x) + g(x)) =$ _____

(c) $\frac{d}{dx} \frac{1}{x} =$ _____ (d) $\frac{d}{dx} \sin x =$ _____

(e) $\frac{d}{dx} \sqrt{x} =$ _____ (f) $\frac{d}{dx} x^2 =$ _____

4. Differentiate:

(a) $\frac{d}{dx} \frac{x^2 + \frac{1}{x} + 5}{3} =$ _____ (b) $\frac{d}{dx} \cos(5 + x - \sqrt{x}) =$ _____

Bonus (can only be completed if all above are attempted):

1. State the product rule: _____

2. State the power rule: _____

3. State the quotient rule: _____

4. Compute: $\frac{d}{dx} \frac{x^2+1}{\sin(x^2)} =$ _____