Calculus I Section 2.4 Homework

1) $y = f(x) = (3x+2)^4$

Let $u =$ _____ $\frac{du}{dx} =$ _____	$y =$ _____ $\frac{dy}{du} =$ _____

$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} =$ _____

2) $y = f(x) = 4(2x+5)^3$

Let $u =$ _____ $\frac{du}{dx} =$ _____	$y =$ _____ $\frac{dy}{du} =$ _____

$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} =$ _____

3) $y = f(x) = (9x+5)^{1/3}$

Let $u =$ _____ $\frac{du}{dx} =$ _____	$y =$ _____ $\frac{dy}{du} =$ _____

$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} =$ _____

4) $y = f(x) = \sqrt[3]{7x^2 + 12}$

Let $u =$ _____ $\frac{du}{dx} =$ _____	$y =$ _____ $\frac{dy}{du} =$ _____

$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} =$ _____

5) $y = f(x) = \frac{1}{x - 5}$

Let $u =$ _____ $\frac{du}{dx} =$ _____	$y =$ _____ $\frac{dy}{du} =$ _____

$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} =$ _____

6) $y = f(x) = \frac{1}{\sqrt{3x + 1}}$

Let $u =$ _____ $\frac{du}{dx} =$ _____	$y =$ _____ $\frac{dy}{du} =$ _____

$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} =$ _____

7) $y = f(x) = \left(\frac{x+1}{x-7}\right)^2$

Let $u =$ _____ $\frac{du}{dx} =$ _____	$y =$ _____ $\frac{dy}{du} =$ _____

$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} =$ _____

8) $y = f(x) = \left(\frac{x^2+1}{x^3-7}\right)^2$

Let $u =$ _____ $\frac{du}{dx} =$ _____	$y =$ _____ $\frac{dy}{du} =$ _____

$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} =$ _____

9) $y = \sin(3x)$

Let $u =$ _____ $\frac{du}{dx} =$ _____	$y =$ _____ $\frac{dy}{du} =$ _____

$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} =$ _____

10) $y = f(x) = \cos(3x)^2$

Let $u =$ _____ $\frac{du}{dx} =$ _____	$y =$ _____ $\frac{dy}{du} =$ _____

$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} =$ _____

11) $y = f(x) = 5\csc^2 x$

Let $u =$ _____ $\frac{du}{dx} =$ _____	$y =$ _____ $\frac{dy}{du} =$ _____

$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} =$ _____

12) $y = f(x) = 3x - 4\sin(\pi x)^2$

Let $u =$ _____ $\frac{du}{dx} =$ _____	$y =$ _____ $\frac{dy}{du} =$ _____

$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} =$ _____

13) $y = f(x) = \sqrt{3x^2 + 6}$ Find equation of tangent line at (1,3).

Let $u =$ _____ $\frac{du}{dx} =$ _____	$y =$ _____ $\frac{dy}{du} =$ _____

$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} =$ _____

$m =$ slope of tangent line = $y'(1) = f'(1) =$ _____

Equation of Tangent Line: _____

14) $y = f(x) = \left(4x^2 + 2\right)^3$ Find equation of tangent line at (0, 8)

Let $u =$ _____ $\frac{du}{dx} =$ _____	$y =$ _____ $\frac{dy}{du} =$ _____

$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} =$ _____

$m =$ slope of tangent line = $y'(0) = f'(0) =$ _____

Equation of Tangent Line: _____