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

Let $u = \underline{\qquad \qquad }$ $\frac{du}{dx} = \underline{\qquad \qquad }$

 $y = \underline{\qquad \qquad }$ $\frac{dy}{du} = \underline{\qquad \qquad }$

$$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} = \underline{\hspace{1cm}}$$

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

Let u =______

 $y = \underline{\qquad \qquad }$ $\frac{dy}{du} = \underline{\qquad \qquad }$

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

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

 $\frac{du}{dx} = \underline{\hspace{1cm}}$

 $y = \underline{\qquad \qquad }$ $\frac{dy}{du} = \underline{\qquad \qquad }$

$$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} = \underline{\hspace{1cm}}$$

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

Let <i>u</i> =	
du	
$\frac{1}{dx} = $	

$$y = \underline{\qquad \qquad }$$

$$\frac{dy}{du} = \underline{\qquad \qquad }$$

$$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} = \underline{\hspace{1cm}}$$

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

Let $u = 1$		
du _		
$\frac{1}{dx} = -$	 	

$$\begin{vmatrix} y = & \\ \frac{dy}{du} = & \\ \end{vmatrix}$$

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

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

Let
$$u = \underline{\frac{du}{dx}} = \underline{\frac{1}{2}}$$

$$\begin{vmatrix} y = & \\ \frac{dy}{du} = & \\ \end{vmatrix}$$

$$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} = \underline{\hspace{1cm}}$$

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

Let $u = \underline{\frac{du}{dt}} = \underline{\frac{du}{dt}}$

 $\begin{vmatrix} y = & \\ \frac{dy}{du} = & \\ \end{vmatrix}$

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

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

Let $u = \underline{\qquad \qquad }$

 $y = \underline{\qquad \qquad }$ $\frac{dy}{du} = \underline{\qquad \qquad }$

$$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} = \underline{\hspace{1cm}}$$

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

Let $u = \underline{\frac{du}{dx}} = \underline{\frac{du}{dx}}$

 $y = \underline{\qquad \qquad }$ $\frac{dy}{du} = \underline{\qquad \qquad }$

$$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} = \underline{\hspace{1cm}}$$

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

Let $u = 1$		
du		
- <u>-</u> =		
$\left \frac{du}{dx} \right = $	 	

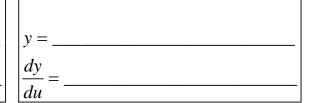
$$y = \underline{\qquad \qquad }$$

$$\frac{dy}{du} = \underline{\qquad \qquad }$$

$$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} = \underline{\hspace{1cm}}$$

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

Let $u = $		
du		
 =		
dx		



$$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} = \underline{\hspace{1cm}}$$

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

Let $u = $		
du		
 =		
dx		

$$y = \underline{\qquad \qquad }$$

$$\frac{dy}{du} = \underline{\qquad \qquad }$$

$$y' = \frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx} = \underline{\hspace{1cm}}$$

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

Let $u = \underline{\hspace{1cm}} \quad | \quad y = \underline{\hspace{1cm}}$

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

 $m = \text{slope of tangent line} = y'(1) = f'(1) = \underline{\hspace{1cm}}$

Equation of Tangent Line:

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

Let u =______ $\frac{du}{dx} =$ ______ $\frac{dy}{du} =$ ______

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

 $m = \text{slope of tangent line} = y'(0) = f'(0) = \underline{\hspace{1cm}}$

Equation of Tangent Line: