

Student Name: \_\_\_\_\_

Score: \_\_\_\_\_

## Derivatives using Power Rule

Sheet 1

Find the derivatives using power rule: or trig functions

1.  $y = 10x^3$   $y' = 30x^2$

10.  $y = \frac{1}{2}x^{-2}$   $y' = -x^{-3}$

2.  $y = \frac{\pi}{4} \sin x$   $y' = \frac{\pi}{4} \cos x$

11.  $y = -2 \cos x$   $y' = 2 \sin x$

3.  $y = \frac{1}{2\sqrt{x}}$   
 $y = \frac{1}{2}x^{-\frac{1}{2}}$   $y' = -\frac{1}{4}x^{-\frac{3}{2}}$

12.  $y = 3x^{\frac{-1}{15}}$   $y' = -\frac{1}{5}x^{-\frac{16}{15}}$

4.  $y = 5 \cot x$   $y' = -5 \csc^2 x$

13.  $y = x^3 - \sec x$   
 $y' = 3x^2 - \sec x \tan x$

5.  $y = 8x^6 + 2x^{17}$   $y' = 48x^5 + 34x^{16}$

14.  $y = \sqrt[5]{x}$   
 $y = x^{\frac{1}{5}}$   $y' = \frac{1}{5}x^{-\frac{4}{5}}$

6.  $y = 2\sqrt{x} + \tan x$   
 $y' = x^{-\frac{1}{2}} + \sec^2 x$

15.  $y = \frac{x^2}{3} + \pi \sin x$

7.  $y = x^{\frac{1}{31}} + x^{\frac{-1}{7}}$   
 $y' = \frac{1}{31}x^{-\frac{30}{31}} - \frac{1}{7}x^{-\frac{8}{7}}$

16.  $y' = 2/3x + \pi \cos x$

16.  $y = 2x^{12} + 6x^7 + x^4$   
 $y' = 24x^{11} + 42x^6 + 4x^3$

8.  $y = x^4 + \cos x - 5$   
 $y' = 4x^3 - \sin x$

17.  $y = -3 \cot x + \frac{1}{x} x^{-1}$   
 $y' = 3 \csc^2 x - x^{-2}$

9.  $y = \frac{5}{3}x^3 - \frac{7}{6}x^6 + \frac{6}{4}x^8$

18.  $y = \frac{31}{2}x^{\frac{3}{2}} - \frac{225}{7}x^{-\frac{5}{2}} + x^{\frac{3}{7}} - \frac{7}{7}$

$y' = 5x^2 - 7x^5 + 12x^7$

$y' = \frac{3}{4}x^{\frac{1}{2}} + \frac{55}{7}x^{-\frac{7}{2}} + \frac{3}{7}x^{-\frac{4}{7}}$