Calculus 1 Name _____

Power Rule Worksheet

Find the derivative of each function.

1. $y = x^8$

2. $y = \sqrt[3]{x}$

3. $y = x^{\frac{-2}{5}}$

4. $f(x) = x^2 - 10x + 100$

5. $g(x) = x^{100} + 50x + 1$

6. $v(r) = \frac{4}{3}\pi r^3$

7. $s(t) = t^8 + 6t^7 - 18t^2 + 2t$

8. $y(t) = 6t^{-9}$

9. $f(x) = (2x)^3$

10. $g(x) = x^2 + \frac{1}{x^2}$

11. $y = \frac{x^2 + 4x + 3}{x}$

12. $f(x) = x - 3x^{\frac{1}{3}}$

13. $y = 5x^{-4} - \frac{7}{8}x^{-2} + 3x^2 - 6$

14. $y = \frac{x^{12} - 2x^9 + 5x^{-7}}{4}$

15. $y = \frac{3}{4x^3} + \frac{7}{2x^9} + \sqrt[5]{x^4} - \sqrt[8]{x^9}$

16. Given $f(x) = x^4 - 3x^3 + 16x$, find $f'(x)$ and $f''(x)$.

17. Find an equation of the line tangent to the given curve at the specified point.

$y = x + \sqrt{x}$ (1,2)

18. Find the points on the curve $y = x^3 - x^2 - x + 1$ where the tangent is horizontal.