15.3 Corrective Assignment – Power Rule   Name: _____

Pre-Calculus

| Find the derivative of each function and simplify. Your answer should contain only positive exponents. |

| 1. $f(x) = 3x$ | 2. $y = 21$ | 3. $f(x) = \frac{4}{x}$ | 4. $y = x^2 - 6x + 11$ | 5. $f(x) = \frac{x}{3}$ |

| 6. $f(x) = 2\pi^5$ | 7. $s(t) = \frac{2}{\sqrt{t}}$ | 8. $s(t) = \frac{5}{t^3}$ | 9. $f(x) = 5\sqrt{x}$ |

| 10. $y = \sqrt[4]{x}$ | 11. $f(x) = \sqrt[3]{x^5}$ | 12. $f(x) = \frac{x}{x^{-3}}$ | 13. $h(x) = \frac{x^3 - 2x^2 + 8x}{x^2}$ |

| 14. $s(t) = 12t - 5t^3 + 8$ | 15. $f(x) = e^4 + 3\pi^2 - 1$ | 16. $y = (x^2 + 2x - 4)(4x^{-2} + x^{-1})$ |

| Find the value of the derivative of the function at the indicated point. |

| 17. $f(x) = \frac{2}{x^3}$ at $(1,2)$ | 18. $f(x) = 5 - \frac{1}{4x}$ at $\left(\frac{1}{3}, \frac{17}{4}\right)$ |

Determine the x-value(s) at which the function has a horizontal tangent line.

19. $y = x^4 - 18x^2 - 3$

20. $y = 7x^2 + 28x - 2$

Find the equation of a tangent line of each function at the indicated point.

21. $f(x) = 5x^2 - 2x + 1; \quad x = 2$

22. $f(x) = 3x^3 - x; \quad x = -1$

Answers to 15.3 Corrective Assignment

1. $f'(x) = 3$	2. $\frac{dy}{dx} = 0$	3. $f'(x) = -\frac{4}{x^2}$	4. $\frac{dy}{dx} = 2x - 6$
5. $f'(x) = \frac{1}{3}$	6. $f'(x) = 0$	7. $s'(t) = -\frac{1}{\sqrt{t^3}}$	8. $s'(t) = -\frac{15}{t^4}$
9. $f'(x) = \frac{5}{2\sqrt{x}}$	10. $\frac{dy}{dx} = \frac{1}{4\sqrt[4]{x^3}}$	11. $f'(x) = \frac{5}{3\sqrt[3]{x^2}}$	12. $f'(x) = 4x^3$
13. $h'(x) = 1 - \frac{8}{x^2}$	14. $s'(t) = 12 - 15t^2$	15. $f'(x) = 0$	16. $\frac{dy}{dx} = 1 - \frac{4}{x^2} + \frac{32}{x^3}$
17. $f'(1) = -6$	18. $f'\left(\frac{1}{3}\right) = \frac{9}{4}$		19. $x = 0, \ 3, \ -3$
20. $x = -2$	21. $y - 17 = 18(x - 2)$ or $y = 18x - 19$		22. $y + 2 = 8(x + 1)$ or $y = 8x + 6$