

6.1 Implicit Differentiation

CA #2

Calculus

Name: _____

Find $\frac{dy}{dx}$.		
1. $3x^2 = -7y^3 + 14$	2. $3y^5 = 2x^3 + y$	3. $x - 3y^2 = 6$
4. $-3y + 4y^3 + 10 = 6x^2$	5. $(y^3 + 1)^2 = 4x^2$	6. $6x^2 = (2y^5 + 3)^2$
7. $\sin(x + y) = 3x$	8. $10x + 1 = \cos(4y^3)$	9. $e^{4y^2} = x^3 + 5$
10. $6 - e^{3y^5} = -2x^{10}$	11. $\ln(4y^3) = 2x + 7$	12. $5x^3 - x = \ln(y^2)$
13. $6 = 2x^3 - 7x^2y$	14. $2x^2 - 3x^3y^3 = 15$	

Use implicit differentiation to find $\frac{d^2y}{dx^2}$.

15. $y^2 + 2y = 7x + 9$

16. $\sin y = 8x$

Find the slope of the tangent line at the given point.

17. $x^2 + 7y^2 = 8y^3$ at $(-6, 2)$

18. $2y^5 - 2 = x^3 - \ln y$ at $(0, 1)$

Answers to 6.1 CA #2

1. $-\frac{2x}{7y^2}$	2. $\frac{6x^2}{15y^4-1}$	3. $\frac{1}{6y}$	4. $\frac{4x}{4y^2-1}$	5. $\frac{4x}{y^5+y^2}$	6. $\frac{3x}{10y^9+15y^4}$
7. $\frac{3}{\cos(x+y)} - 1$	8. $-\frac{5}{6y^2 \sin(4y^3)}$	9. $\frac{3x^2}{8ye^{4y^2}}$	10. $\frac{4x^9}{3y^3e^{3y^5}}$	11. $\frac{2}{3}y$	12. $\frac{y}{2}(15x^2 - 1)$
13. $\frac{6}{7} - \frac{2y}{x}$	14. $\frac{4}{9x^2y^2} - \frac{y}{x}$	15. $-\frac{49}{4(y+1)^3}$	16. $64 \sec^2 y \tan y$	17. $-\frac{3}{17}$	18. -10