

Section 4.3 Implicit Differentiation (Minimum Homework: all odds)

#1-16: Use implicit differentiation to determine $\frac{dy}{dx}$.

1) $y^2 - 3x^2 = 4x - 3$

2) $y^2 - 2x^2 = 5x - 2$

3) $5y - 2x^2 = 4x$

4) $6y - 7x^3 = 5x$

5) $y^2 + 3y = 5x^2 + 3x + 1$

6) $y^2 + 6y = 2x^2 - 9x + 1$

7) $3y^2 - y = x^2 - 4x$

8) $2y^2 - y = 3x^2 - 5x$

9) $y^2 = 6y + x$

10) $y^2 = 3y + 2x$

11) $3y = y^2 + 4x - 3$

12) $8y = y^2 + 2x - 1$

13) $xy - 3x^2 = 5x$

14) $xy - 6x^2 = 9x$

15) $5xy - 3x^2 = 5x^3$

16) $2xy - 6x^2 = 7x^3$

#17- 20: Find the equation of the line tangent to the graph at the indicated point. (Hint, these derivatives have been calculated above.)

17) $y^2 - 3x^2 = 4x - 3$; (1,2)

18) $y^2 - 2x^2 = 5x - 2$; (2,4)

19) $xy - 3x^2 = 5x$; (2, -1)

20) $xy - 6x^2 = 9x$; (1,3)

#21-28: Use implicit differentiation to determine $\frac{dr}{dt}$.

21) $C = 2\pi r$

22) $C = \pi r$

23) $A = 5r^2$

24) $A = \pi r^2$

25) $V = 5 + 6r^2$

26) $V = 2r^2 + 8$

27) $V = \frac{2}{3}\pi r^3$

28) $V = \frac{4}{3}\pi r^3$