

Name: _____

Date: _____

2E Exercises

Implicit Differentiation Rules

Use Implicit differentiation to find the derivative of the function.

$$1. \ x^2 + y^2 = 9$$

$$3. \ x^{1/2} + y^{1/2} = 16$$

$$5. \ x^3 - xy + y^2 = 7$$

$$7. \ x^3y^3 - y = x$$

$$9. \ x^3 - 3x^2y + 2xy^2 = 12$$

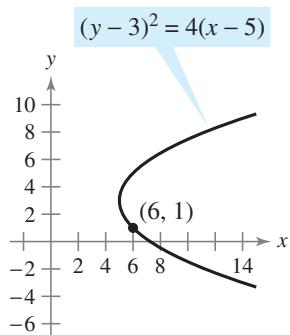
$$11. \ \sin x + 2 \cos 2y = 1$$

13. $\sin x = x(1 + \tan y)$

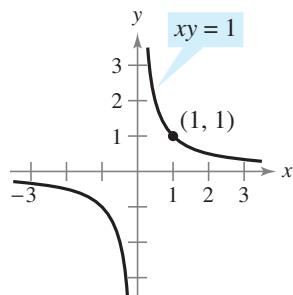
15. $y = \sin xy$

Find the equation of the tangent line at the given point. You can check this by graphing on Desmos

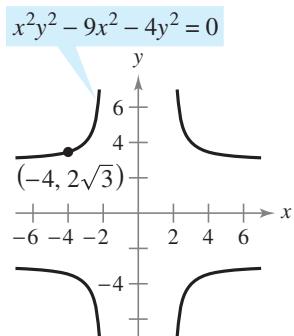
33. Parabola



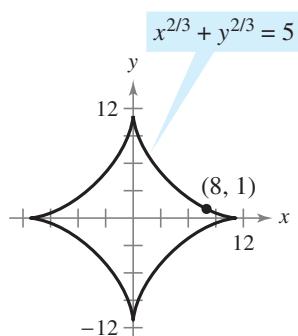
35. Rotated hyperbola



37. Cruciform



38. Astroid



Find the second derivative in terms of y and x .

45. $x^2 + y^2 = 4$

47. $x^2 - y^2 = 36$