

Implicit Differentiation

Directions: Find the equation of the tangent line @ the given point.

- 1) $x^2 - 3xy + y^2 = -1$ at $(2, 1)$ $y - 1 = \frac{1}{4}(x - 2)$
- 2) $4x^2 + 9y^2 = 2$ at $(\frac{1}{2}, \frac{1}{3})$ $y - \frac{1}{3} = -\frac{2}{3}(x - \frac{1}{2})$
- 3) $x\sqrt[3]{y} + y\sqrt[3]{x} = 10$ at $(1, 8)$ $y - 8 = -\frac{56}{13}(x - 1)$
- 4) $(y - 5)^5 = x^2 + 2xy - 33$ at $(3, 4)$ $y - 4 = -14(x - 3)$
- 5) $3^x + 4^y + 5^{x+y} = 650$ at $(2, 2)$ $y - 2 = -0.988(x - 2)$
- 6) $x \sin y + y \sin x = .7629$ at $(\frac{\pi}{4}, \frac{\pi}{6})$ $y - \frac{\pi}{6} = -0.627(x - \frac{\pi}{4})$
- 7) $3x^{\frac{1}{3}} + 5y^{\frac{1}{3}} = 8$ at $(1, 1)$ $y - 1 = -\frac{3}{5}(x - 1)$
- 8) $x^2 e^y + y^2 e^x = 2e$ at $(1, 1)$ $y - 1 = -1(x - 1)$
- 9) $5x^2 - 7y^2 = 17$ at $(3, 2)$ $y - 2 = \frac{15}{14}(x - 3)$
- 10) $e^{\sin x} + e^{\sin y} = 2$ at $(0, \pi)$ $y - \pi = x$