

Ch. 4 Sec.6

1. Suppose $2y^3 + 4y - 2x = 62$. Find $\frac{dy}{dt}$ if $x = 2$, $y = 3$ and $\frac{dx}{dt} = -5$.
2. Suppose $x^2 + 4y^2 = 8$ and $\frac{dx}{dt} = -3$ ft/sec when $x = 2$, $y = 1$. Find $\frac{dy}{dt}$ when $x = 2$, $y = 1$.
3. Suppose $x^2 + xy + y^3 = 7$ and $\frac{dx}{dt} = -5$ ft/sec when $x = 2$, $y = 1$. Find $\frac{dy}{dt}$ when $x = 2$, $y = 1$.
4. Suppose $xy + e^y = 1$ and $\frac{dx}{dt} = -2$ ft/sec when $x = 1$, $y = 0$. Find $\frac{dy}{dt}$ when $x = 1$, $y = 0$.
5. Suppose that x and y are functions of t , and
 $x + 5x + y^4 + 2y = 15$. Find $\frac{dy}{dt}$, if $x = 2$, $y = 1$, and $\frac{dx}{dt} = -5$.
6. Suppose that x and y are functions of t , and
 $xy + y^4 = 3$. Find $\frac{dy}{dt}$, if $x = 2$, $y = 1$, and $\frac{dx}{dt} = -7$.

Answers:

$$1. 6y^2y' + 4y' - 2x' = 0$$

$$6 \cdot 3^2y' + 4y' - 2(-5) = 0$$

$$y' = -10/58 = -0.1724$$

$$2. 2xx' + 8yy' = 0$$

$$2 \cdot 2^2 \cdot (-3) + 8 \cdot 1^2 \cdot y' = 0$$

$$y' = 12/8 = 1.5$$

$$3. 2xx' + xy' + x'y + 3y^2y' = 0$$

$$2 \cdot 2^2 \cdot (-5) + 2y' + (-5) \cdot 1 + 3 \cdot 1^2 \cdot y' = 0$$

$$y' = 5$$

$$4. xy' + x'y + e^y y' = 0$$

$$1 \cdot y' + (-2) \cdot 0 + e^{0^y} y' = 0$$

$$y' = 0$$

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5. $x' + 5x' + 4y^3y' + 2y' = 0$

$$-5 + 5*-5 + 4*1^3y' + 2*y' = 0$$

$$y' = 30/6 = 5$$

6. $xy' + x'y + 4y^3y' = 0$

$$2y' + (-7)*1 + 4*1^3*y' = 0$$

$$y' = 7/6$$