AP Calculus – Worksheet – Implicit Differentiation

Find dy/dx for each of the following.

$$1. \quad y^3 = x \sin x$$

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

$$2. \quad \frac{\sqrt{2x}}{y} = \sin y$$

6.
$$7x(y+3) = \tan y - x$$

$$3. \quad \cos(xy) = x$$

$$7. \quad \frac{x^2 + y^2}{x^2 - y^2} = 4$$

$$4. \quad \cos(x+y) = x$$

8.
$$x^3 + x^2y^2 + y^3 = 30$$

9.
$$3x^2 + \tan y + (y+3)^2 = 5$$

10. $\sin y \cos y = 2x^3 + x$

11. If $9x^2 + 4y^2 = 25$, find

a.
$$\frac{dy}{dx}$$

c.
$$\frac{d^2y}{dx^2}$$

b.
$$\frac{dy}{dx}\Big|_{(1,2)}$$

$$d. \quad \frac{d^2y}{dx^2}\bigg|_{(1,2)}$$