Classroom Voting Questions: Calculus I

3.7 Implicit Differentiation

1. Find $\frac{dy}{dx}$ implicitly if $y^3 = x^2 + 1$.

   (a) $\frac{dy}{dx} = \frac{2}{3}x$

   (b) $\frac{dy}{dx} = 0$

   (c) $\frac{dy}{dx} = \frac{x^2+1}{3y^2}$

   (d) $\frac{dy}{dx} = \frac{2x}{3y^2}$

2. Find $\frac{dy}{dx}$ implicitly if $x^2 + y^2 = 4$.

   (a) $\frac{dy}{dx} = -\frac{x}{y}$

   (b) $\frac{dy}{dx} = \frac{2}{y} - \frac{x}{y}$

   (c) $\frac{dy}{dx} = -2x$

   (d) $\frac{dy}{dx} = 0$

   (e) $\frac{dy}{dx} = -xy$

   (f) None of the above

3. Find $\frac{dy}{dx}$ implicitly if $x = y^4 + 3$

   (a) $\frac{dy}{dx} = -\frac{1}{2y^3}$

   (b) $\frac{dy}{dx} = \frac{1}{4y^3}$

   (c) $\frac{dy}{dx} = \frac{x}{4y^3}$

(d) $\dfrac{dy}{dx} = \left(\frac{1}{4}\right)^{1/3}$

(e) $\dfrac{dy}{dx} = 0$

(f) None of the above