

Assignment

Date _____ Period _____

Differentiate each function with respect to x .

1) $y = (-5x^3 + 2)^2$

2) $y = (2x^2 - 1)^3$

3) $y = (4x^3 + 3)^4$

4) $y = (3x^2 - 2)^4$

5) $y = \cos 3x^5$

6) $y = \sin 4x^4$

7) $y = \cos x^5$

8) $y = \cos 5x^2$

9) $y = 2x^5(5x^2 + 2)$

10) $y = (4x^2 + 5) \cdot 2x^4$

11) $y = \frac{2}{5x^2 + 5}$

12) $y = \frac{3}{x^3 - 4}$

For each problem, use implicit differentiation to find $\frac{dy}{dx}$ in terms of x and y .

13) $5x^2 = -2y^3 + 5$

14) $-3y^3 + 3y^2 = x$

15) $3x + 3x^2y^2 = 3y^3$

16) $xy = x^2 + 5y^2$

For each problem, use implicit differentiation to find $\frac{dy}{dx}$ at the given point.

17) $4 = 3x^2 - y^3$ at $(-2, 2)$

18) $y^2 + 3 = x^2$ at $(2, 1)$

For each problem, use implicit differentiation to find $\frac{d^2y}{dx^2}$ in terms of x and y .

19) $3 = 3x^2 + 3y^2$

20) $2x^3 - 5y^2 = 3$