

Review 13.1-13.3

Date _____ Period _____

Differentiate each function with respect to x .

1) $f(x) = 5x^4$

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

3) $f(x) = -4x$

4) $f(x) = 3$

5) $y = -4x^4 + 5x^3 + 2x$

6) $y = 3x^5 + 4x + 5$

7) $y = \frac{4}{3}x^3 + 2x$

8) $f(x) = \frac{5}{3}x^4 + \frac{1}{5}x^2$

9) $y = 4x + 3x^{-5}$

10) $f(x) = 4x^4 + \frac{5}{x^3}$

11) $y = 4x^{-2} + \frac{5}{x^3}$

12) $f(x) = \frac{1}{x^2} + \frac{4}{x^4}$

For each problem, find $f'(1)$.

13) $f(x) = -x^3 + 4x^2 - 6$

For each problem, find the gradient (slope) of the function at the given value.

14) $y = -x^2 + 4x$ at $x = 3$

For each problem, find the equation of the line tangent to the function at the given value. Your answer should be in slope-intercept form.

15) $y = x^2 + 8x + 13$ at $x = -2$

For each problem, find the equation of the line normal to the function at the given point. Your answer should be in slope-intercept form.

16) $y = \frac{x^2}{2} - 4x + 5$ at $x = 0$

For each problem, find the points where the tangent line to the function is horizontal.

17) $y = -x^3 + 3x^2 - 6$

For each problem, find the indicated derivative with respect to x .

18) $f(x) = -5x^4 - 5x^3 + 5x^2$ Find f''

19) $f(x) = 2x^4 + 3x^2 + 5x$ Find $f''(2)$