Calculus - Clausi

Name_____ ID: 1

April 6-8 Assigment

Date_____ Period____

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

1) $y = -\dfrac{3}{x-3}$ at $x = 2$

2) $y = -2x^2 + 16x - 29$ at $x = 2$

3) $y = (2x+2)^{\frac{1}{3}}$ at $x = 3$

4) $y = -\dfrac{x^2}{4x-8}$ at $x = -3$

5) $y = x^3 - x^2 - 5x - 1$ at $x = 0$

6) $y = (x+1)^{\frac{1}{3}}$ at $x = 2$

7) $y = \dfrac{x^2}{2x-2}$ at $x = 0$

8) $y = \dfrac{2}{x^2-1}$ at $x = -3$

9) $y = -(x-2)^{\frac{1}{3}}$ at $x = 3$

10) $y = -2x^2 - 4x - 1$ at $x = -3$

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

$y - y_1 = m(x - x_1)$

11) $y = -x^3 - 10x^2 - 32x - 28$ at $(-2, 4)$

12) $y = \frac{x^2}{2} + 3x + \frac{11}{2}$ at $\left(0, \frac{11}{2}\right)$

13) $y = \frac{x^2}{2x + 4}$ at $\left(1, \frac{1}{6}\right)$

14) $y = -\frac{16}{x^2 + 4}$ at $\left(-1, -\frac{16}{5}\right)$

15) $y = x^3 - x^2 - 2$ at $(0, -2)$

16) $y = -(2x - 2)^{\frac{1}{3}}$ at $(-3, 2)$

17) $y = \frac{4x}{x^2 + 4}$ at $(0, 0)$

18) $y = (x - 2)^{\frac{1}{3}}$ at $(3, 1)$

19) $y = -2x^2 - 8x - 9$ at $(-2, -1)$

20) $y = x^2 - 8x + 18$ at $(3, 3)$

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

$y' = 0$

21) $y = x^3 - 3x^2$

22) $y = -\dfrac{x^2}{3x+3}$

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

24) $y = -\dfrac{3}{x^2 - 1}$

25) $y = -\dfrac{x^2}{4x - 2}$

26) $y = -\dfrac{3}{x^2 - 4}$

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

28) $y = \dfrac{4x}{x^2 + 4}$

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

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