

Writing Tangent and Secant Lines (LT 2B)

Date _____ Period _____

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.

1) $y = -x^3 - 5x^2 - 3x + 4$ at $(-3, -5)$

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

3) $y = -\frac{x^2}{2} - x + \frac{9}{2}$ at $(-1, 5)$

4) $y = \frac{x^2}{3x - 3}$ at $\left(-2, -\frac{4}{9}\right)$

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

6) $y = x^3 - 4x^2 + 4$ at $(1, 1)$

For each problem, find the equation of the secant line that intersects the given points on the function.

7) $y = 2x^2 - 2$; $(0, -2), (2, 6)$

8) $y = x^2 + 1$; $(-2, 5), (1, 2)$

9) $y = -x^2 + 2x + 1$; $(-1, -2), (2, 1)$

10) $y = 2x^2 + x + 1$; $(-2, 7), (0, 1)$

11) $y = \frac{1}{x-2}$; $\left(-2, -\frac{1}{4}\right), \left(-1, -\frac{1}{3}\right)$

12) $y = -\frac{1}{x-1}$; $\left(-4, \frac{1}{5}\right), \left(-1, \frac{1}{2}\right)$

13) $y = \frac{1}{x+1}$; $\left(1, \frac{1}{2}\right), \left(2, \frac{1}{3}\right)$

14) $y = -\frac{1}{x+1}$; $(0, -1), \left(3, -\frac{1}{4}\right)$

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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.

1) $y = -x^3 - 5x^2 - 3x + 4$ at $(-3, -5)$

$$y = -5$$

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

$$y = 9x - 23$$

3) $y = -\frac{x^2}{2} - x + \frac{9}{2}$ at $(-1, 5)$

$$y = 5$$

4) $y = \frac{x^2}{3x - 3}$ at $(-2, -\frac{4}{9})$

$$y = \frac{8}{27}x + \frac{4}{27}$$

5) $y = \frac{x^2}{2} - 2x - 1$ at $(1, -\frac{5}{2})$

$$y = -x - \frac{3}{2}$$

6) $y = x^3 - 4x^2 + 4$ at $(1, 1)$

$$y = -5x + 6$$

For each problem, find the equation of the secant line that intersects the given points on the function.

7) $y = 2x^2 - 2$; $(0, -2), (2, 6)$

$$y = 4x - 2$$

8) $y = x^2 + 1$; $(-2, 5), (1, 2)$

$$y = -x + 3$$

9) $y = -x^2 + 2x + 1$; $(-1, -2), (2, 1)$

$$y = x - 1$$

10) $y = 2x^2 + x + 1$; $(-2, 7), (0, 1)$

$$y = -3x + 1$$

11) $y = \frac{1}{x-2}$; $\left(-2, -\frac{1}{4}\right), \left(-1, -\frac{1}{3}\right)$

$$y = -\frac{1}{12}x - \frac{5}{12}$$

12) $y = -\frac{1}{x-1}$; $\left(-4, \frac{1}{5}\right), \left(-1, \frac{1}{2}\right)$

$$y = \frac{1}{10}x + \frac{3}{5}$$

13) $y = \frac{1}{x+1}$; $\left(1, \frac{1}{2}\right), \left(2, \frac{1}{3}\right)$

$$y = -\frac{1}{6}x + \frac{2}{3}$$

14) $y = -\frac{1}{x+1}$; $(0, -1), \left(3, -\frac{1}{4}\right)$

$$y = \frac{1}{4}x - 1$$