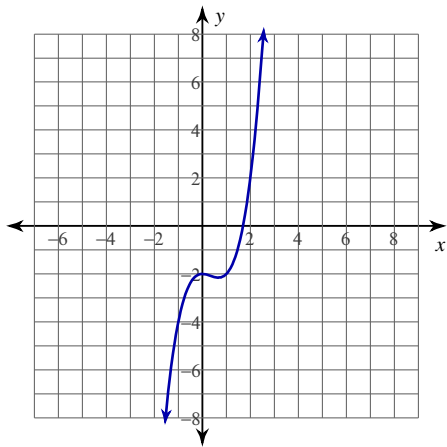


Normal Lines

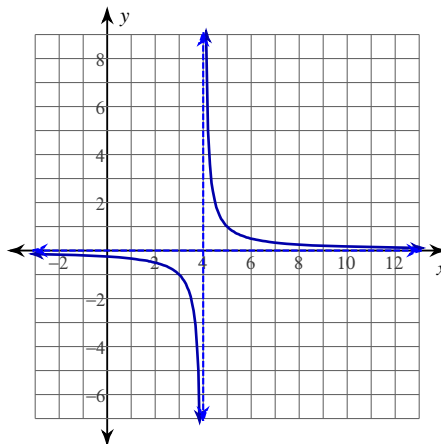
Date _____ Period _____

For each problem, find the equation of the line normal to the function at the given point. If the normal line is a vertical line, indicate so. Otherwise, your answer should be in slope-intercept form.

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



2) $y = \frac{1}{x-4}$ at $(5, 1)$



3) $y = -x^3 + 15x^2 - 72x + 110$ at $(4, -2)$

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

5) $y = \frac{3}{x+2}$ at $(4, \frac{1}{2})$

6) $y = (2x-8)^{\frac{1}{3}}$ at $(0, -2)$

7) $y = \ln(x+4)$ at $(-3, 0)$

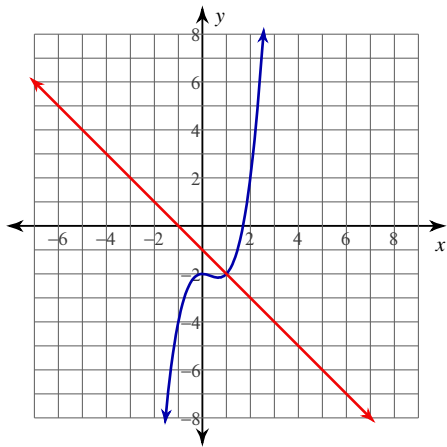
8) $y = -\sin(2x)$ at $(-\frac{\pi}{2}, 0)$

Normal Lines

Date _____ Period _____

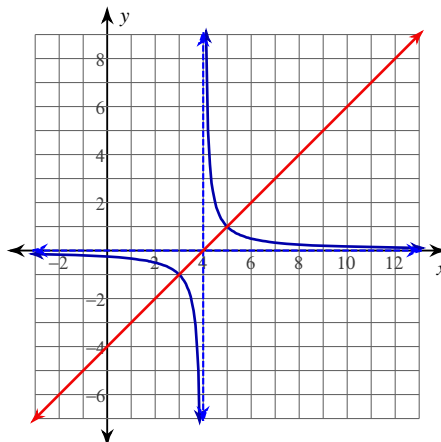
For each problem, find the equation of the line normal to the function at the given point. If the normal line is a vertical line, indicate so. Otherwise, your answer should be in slope-intercept form.

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



$$y = -x - 1$$

2) $y = \frac{1}{x-4}$ at $(5, 1)$



$$y = x - 4$$

3) $y = -x^3 + 15x^2 - 72x + 110$ at $(4, -2)$

Normal line is vertical line at $x = 4$

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

$$y = 2x - 9$$

5) $y = \frac{3}{x+2}$ at $(4, \frac{1}{2})$

$$y = 12x - \frac{95}{2}$$

6) $y = (2x-8)^{\frac{1}{3}}$ at $(0, -2)$

$$y = -6x - 2$$

7) $y = \ln(x+4)$ at $(-3, 0)$

$$y = -x - 3$$

8) $y = -\sin(2x)$ at $(-\frac{\pi}{2}, 0)$

$$y = -\frac{1}{2}x - \frac{\pi}{4}$$