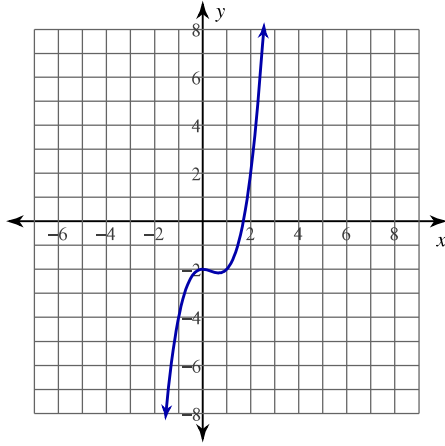


## Normal Lines

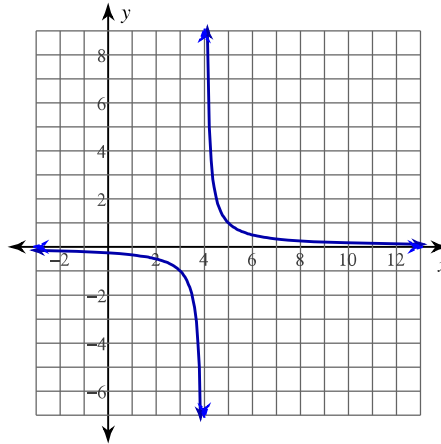
Date \_\_\_\_\_ Period \_\_\_\_\_

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  $(-\frac{\pi}{2}, 0)$