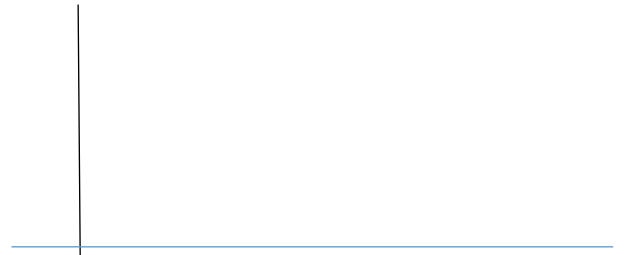
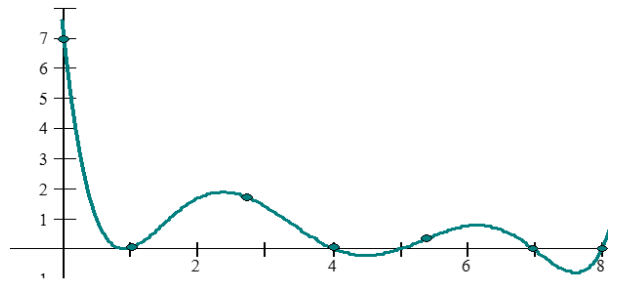


## Interpreting the derivative

The cricket population in Pole Lotted Wood has been monitored for the past 8 months.  $Y$  is the number of crickets in hundreds crickets per month. The rate of change of  $Y$  is recorded below.

19. Describe what is happening to the cricket population over the 8-month period.
20. Which of the following would have the most and the least crickets living in the woods: month 4, 5, 6, 7, 8.
21. Which has the most and least crickets of all the months?
22. If there were 100 crickets in the Pole Lotted Woods when the research was started, make a graph of  $y$ .
23. At what point is the number of crickets decreasing the fastest?



Find the equation of the tangent line for

1.  $x^2y - y = -3x$  at  $x = 2$

2.  $x^2y + 2y = 8$  when  $x = 1$

Find the AVERAGE RATE OF CHANGE on the given interval.

3.  $f(x) = \sin 2x$ ;  $\left[0, \frac{\pi}{6}\right]$

4.  $f(x) = \frac{2x-1}{x+3}$ ;  $[0, 4]$

Find the critical numbers of each.

1.  $f(x) = 3x - x^{1/3}$

2.  $f(x) = x(x+2)^2$

3.  $f(x) = \frac{8}{3}x^3 - 7x^2 + 3x - 2$

Find the ABSOLUTE EXTREMA on the given interval. Justify your answer.

4.  $f(x) = x^3 - 12x$ ;  $[0, 4]$

5.  $g(x) = 4x^2 + \frac{1}{x}$ ;  $[\frac{1}{4}, 2]$