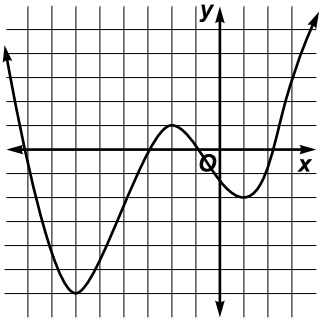
NAME _____ DATE _____ PERIOD _____

Practice

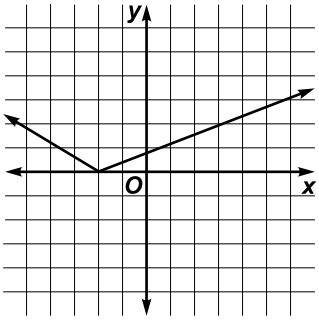
Critical Points and Extrema

Locate the extrema for the graph of y = f(x). Name and classify the extrema of the function.

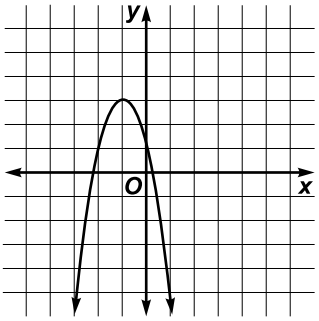
1.



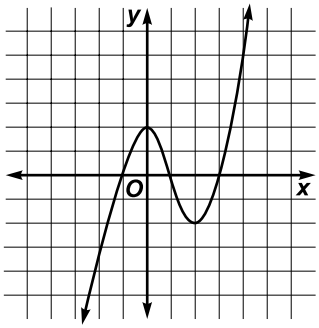
2.



3.

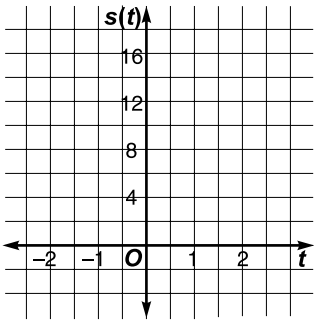


4.



Determine whether the given critical point is the location of a maximum, a minimum, or a point of inflection.

5. $y = x^2 - 6x + 1, x = 3$ **6.** $y = x^2 - 2x - 6, x = 1$ **7.** $y = x^4 + 3x^2 - 5, x = 0$

8. $y = x^5 - 2x^3 - 2x^2, x = 0$ **9.** $y = x^3 + x^2 - x, x = -1$ **10.** $y = 2x^3 + 4, x = 0$

11. ***Physics*** Suppose that during an experiment you launch a toy rocket straight upward from a height of 6 inches with an initial velocity of 32 feet per second. The height at any time t can be modeled by the function $s(t) = -16t^2 + 32t + 0.5$ where $s(t)$ is measured in feet and t is measured in seconds. Graph the function to find the maximum height obtained by the rocket before it begins to fall.