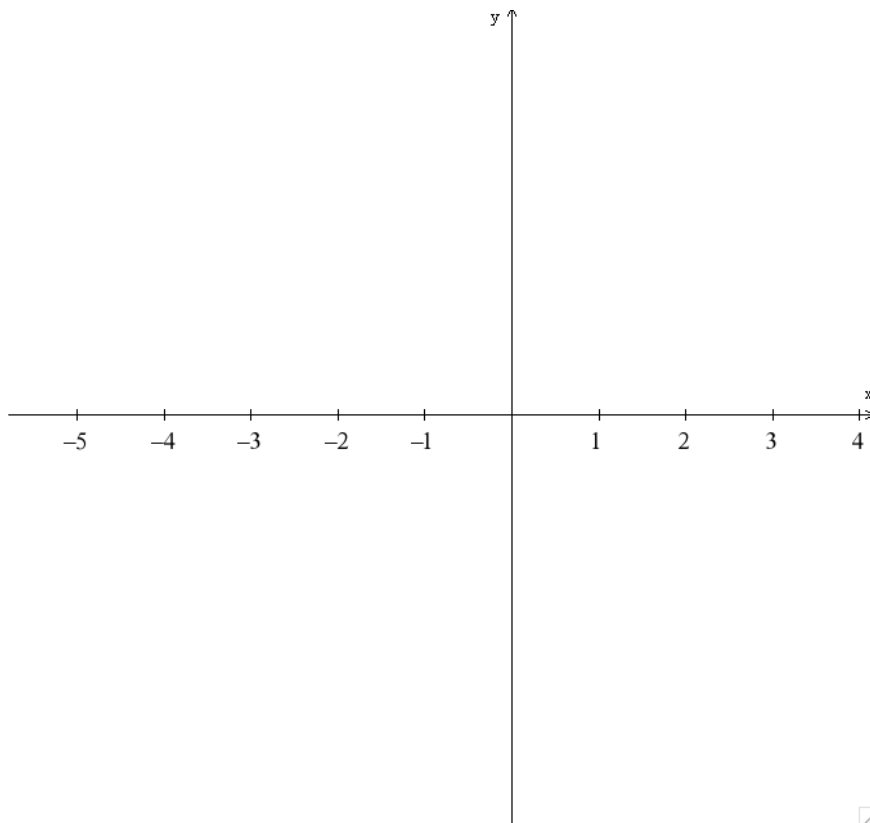


## Extreme Values of Functions

Name \_\_\_\_\_

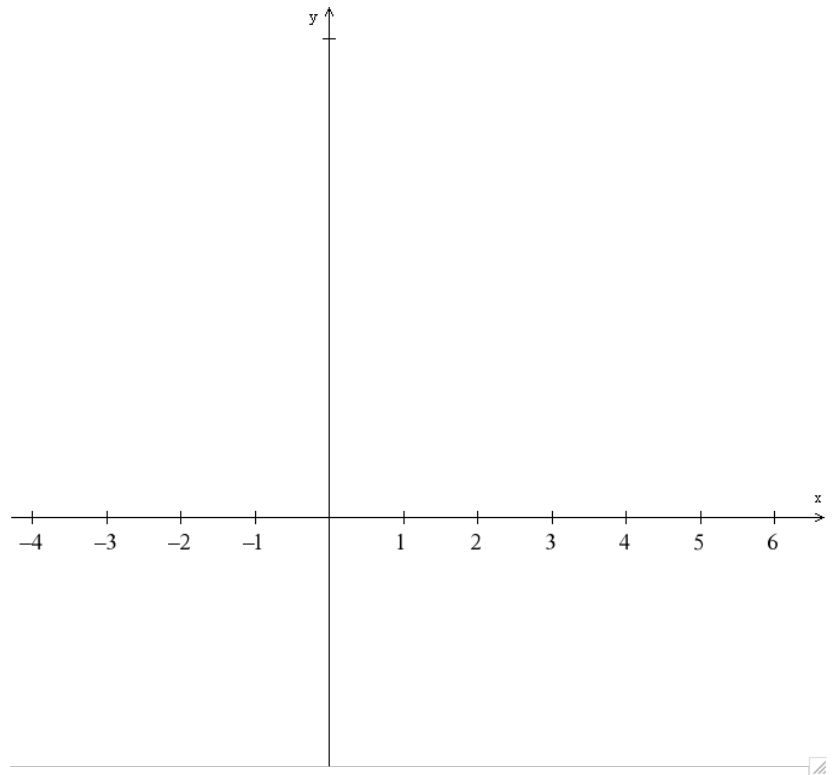
Find the critical values of the functions given and indicate which are maxima or minima and determine if it is relative or absolute. Sketch the graph of the function on the axes provided. Show the work that leads to your answers. Use your calculators only to check your answers.

1)  $y = 4x^3 + 15x^2 - 18x$



2) Indicate changes in your answer for #1 if the domain were restricted to  $[-4, 2]$

$$3) \quad y = 2x^5 - \frac{25x^4}{2} + 10x^3 + 45x^2 - 7$$



- 4) Shannon, Alena, Cassie, and Lauren, jealous of Diego, Jeneiah, Adeeb, and Campbell for being in a worksheet problem try to design the most challenging particle motion problem they can create. The result is below:

The position of a particle moving along the  $x$ -axis is described by the equation

$$x(t) = \frac{t^5}{5} - 2t^4 + 5t^3 + 2t^2 - 20t + 3 \text{ over the interval } 0 \leq t \leq 6$$

- (a) When and where does the particle change directions?

- (b) At what time is the particle furthest to the left of the origin?