



Examples 2.4 – Analyzing Cubic Functions

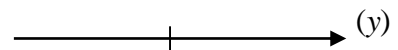
1. Let $y = -x^3 + 6x^2 - 12x + 72$.

(a) Find all roots (x -intercepts).

Solution:

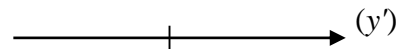
(b) Determine the intervals on which the function is positive and the intervals on which it is negative.

Solution:



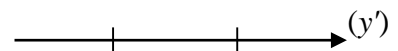
(c) Find the derivative of y and use it to determine extrema, saddle points, and intervals of increase and decrease.

Solution:



2. Find the roots and extrema of $y = x^3 - 2x^2 - 5x + 6$.

Solution:



3. Graph the functions from Parts 1 and 2 on your calculator and visually identify the characteristics we obtained above.