

LT18: I can graph polynomial functions and identify zeros, intercepts, maxima, and minima.

3.6 Critical Points and Extrema

Critical points - Points on a graph at which a line drawn tangent to the curve is horizontal or vertical. (Basically anytime a graph changes direction)

-Can be a maximum, minimum or a point of inflection (when graph changes its curvature).

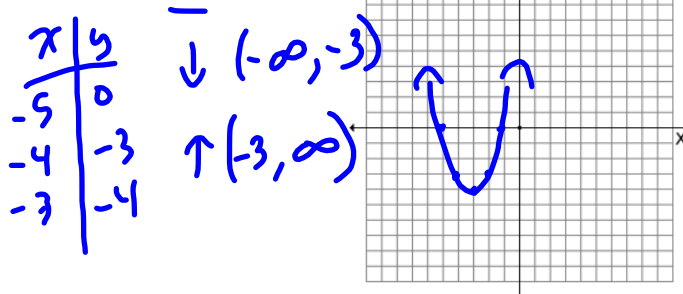
Extrema (plural form of extremum) - General term for maximum or minimum.

-Relative maximum/minimum is the greatest/least IN ITS NEIGHBORHOOD.

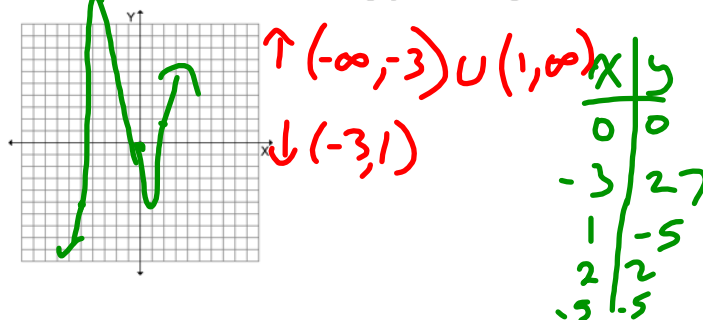
-Absolute maximum/minimum is the greatest/least ANYWHERE (in the domain).

___ LT17: I can determine if a function is increasing or decreasing on an interval.

5. Draw the graph of $y = (x + 3)^2 - 4$. Determine the intervals over which the graph is increasing and the intervals over which the graph is decreasing.

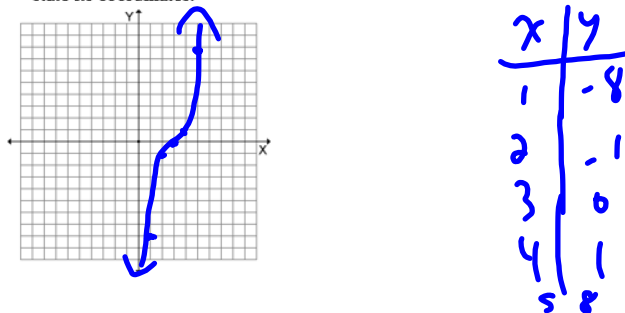


6. Draw the graph of $y = x^3 + 3x^2 - 9x$. Determine the intervals over which the graph is increasing and the intervals over which the graph is decreasing.



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7. The function $f(x) = x^3 - 9x^2 + 27x - 27$ has a critical point when $x = 3$. Draw the graph $f(x)$ and identify the critical point as a maximum, a minimum, or a point of inflection, and state its coordinates.



Point of inflection
@ (3, 0)