Analyzing Graphs of Polynomial Functions

Example 1:

Graph $f(x) = -2(x^2 - 9)(x + 4)$.

$f(x) = -2(x+3)(x-3)(x+4)$ 72

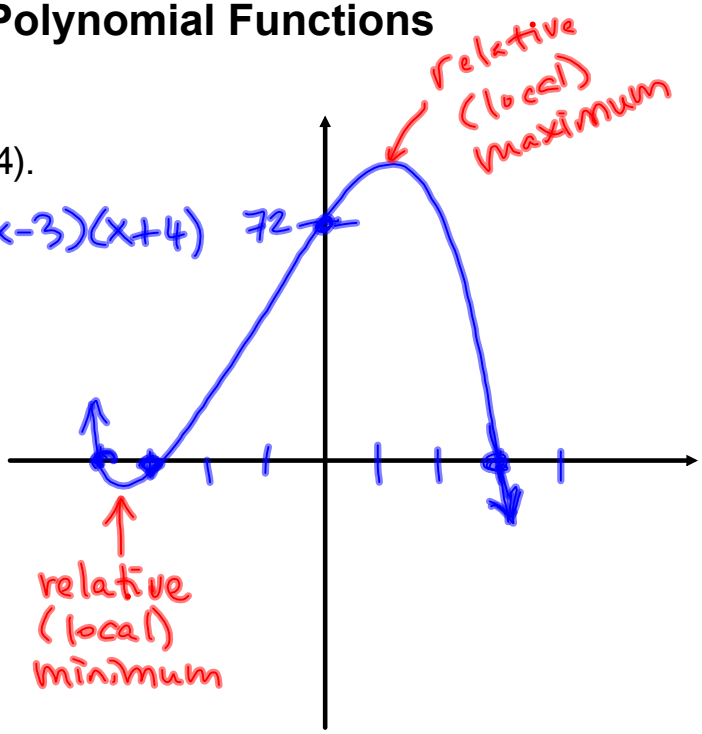
$f(-2) = 20$

$f(-1) = 48$

$f(0) = 72$

$f(1) = 80$

$f(2) = 60$



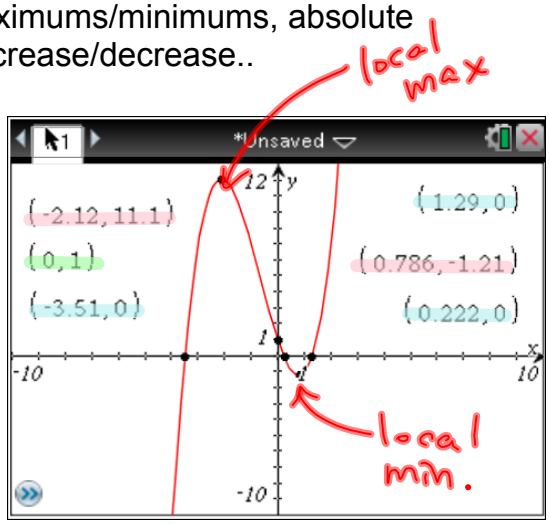
Example 2:

Graph $f(x) = x^3 + 2x^2 - 5x + 1$.

Identify the x-and y-intercepts, local maximums/minimums, absolute maximums/minimums and interval of increase/decrease..

x-int: (-3.51,0)(0.222,0)(1.29,0)

y-int: (0,1)



local max: (-2.12, 11.1)

local min: (0.786, -1.21)

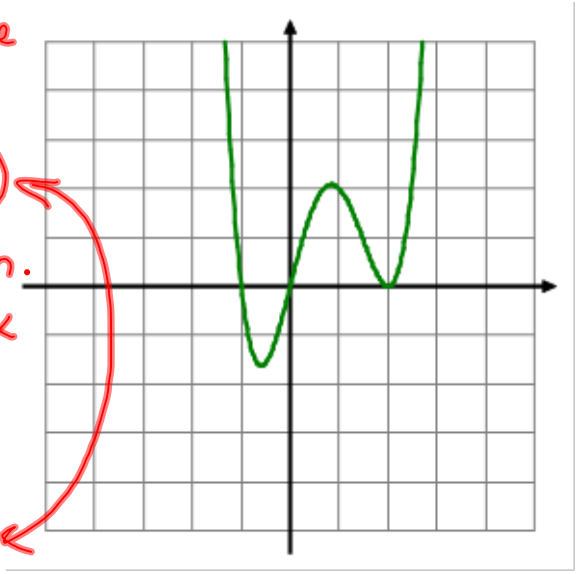
absolute max: ∞

absolute min: $-\infty$

int. of incr: $(-\infty, -2.12) \cup (0.786, \infty)$

int of decr: $(-2.12, 0.786)$

Example 3:
List everything you know about the given function.



lead. coefficient is positive
degree 4 (quartic)
3 real roots (one double)
abs. min = one rel. min.
2 rel. min / 1 rel. max
3 turning points
y-int: (0,0)
3 x-int: (-1,0) (0,0) (2,0)
2 intervals of increase
2 intervals of decrease
absolute max = ∞