7. $f(x) = x^3 - 9x^2 + 2$

$f'(x) = 3x^2 - 9 \cdot 2x^1$

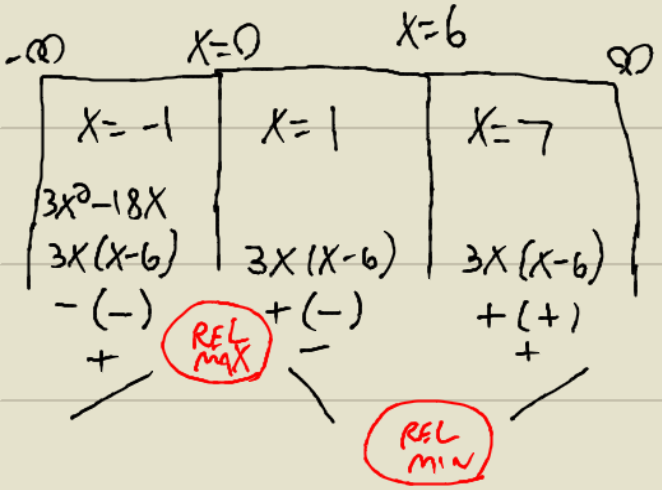
$= \boxed{3x^2 - 18x}$

$3x^2 - 18x = 0$

GCF $\quad 3x(x-6) = 0$

$3x = 0 \quad x - 6 = 0$

$\boxed{x = 0 \quad x = 6}$



INC $(-\infty, 0)$
DEC $(0, 6)$
INC $(6, \infty)$

REL MAX
$x = 0$
$y = x^3 - 9x^2 + 2$
$y = 0^3 - 9(0)^2 + 2$
$y = 2$
REL MAX : $(0, 2)$

REL MIN
$x = 6$
$y = x^3 - 9x^2 + 2$
$y = 6^3 - 9(6)^2 + 2$
$y = -106$
REL MIN : $(6, -106)$

FINDING RELATIVE EXTREMA

① FIND DERIVATIVE

② SET EQUAL TO ZERO AND SOLVE "CRITICAL NUMBERS"

③ USING CRITICAL NUMBERS, BUILD A TABLE OF INTERVALS, PICK TEST CASES, PLUG INTO DERIVATIVE AND DETERMINE INC/DEC AND FIND REL. MIN/MAXs

NOTE: ASSUMING GRAPH EXISTS AT THAT POINT

REL MAX: CHANGES FROM INC TO DEC
REL MIN: CHANGES FROM DEC TO INC

④ PLUG THE X VALUES FOR REL. MIN/MAX INTO ORIG FUNCTION TO FIND y VALUES