6. $f(x) = 2x^3 - 6x \quad [0,5]$

$f'(x) = 2 \cdot 3x^2 - 6$

$= 6x^2 - 6$

$6x^2 - 6 = 0$

GCF $6(x^2 - 1) = 0$

DOTS $6(x+1)(x-1) = 0$

$x+1=0 \quad x-1=0$

~~$x=-1$~~ $x=1$ CRIT. #'s

FINDING ABSOLUTE EXTREMA

① FIND DERIVATIVE

② SET THIS EQUAL TO ZERO AND SOLVE (EXCLUDE ANY CRITICAL NUMBERS NOT IN THE INTERVAL)

③ PLUG IN REMAINING CRITICAL NUMBERS AND ENDPOINTS INTO ORIG FUNCTION

LARGEST VALUE: ABSOLUTE MAX

SMALLEST VALUE: ABSOLUTE MIN

$x=0$

$f(x) = 2x^3 - 6x$

$f(0) = 2(0)^3 - 6(0)$

$= 0$

$x=5$

$f(x) = 2x^3 - 6x$

$f(5) = 2(5)^3 - 6(5)$

$= 2(125) - 30$

$= 250 - 30$

$= 220$

ABS MAX (5, 220)

$x=1$

$f(x) = 2x^3 - 6x$

$f(1) = 2(1)^3 - 6(1)$

$= 2 - 6$

$= -4$

ABS MIN (1, -4)