2. $f(x) = \frac{1}{5}x^5 - 16x$

① $f'(x) = \frac{1}{5} \cdot 5x^4 - 16$

$= x^4 - 16$

② $x^4 - 16 = 0$

$(x^2+4)(x^2-4) = 0$

$(x^2+4)(x+2)(x-2) = 0$

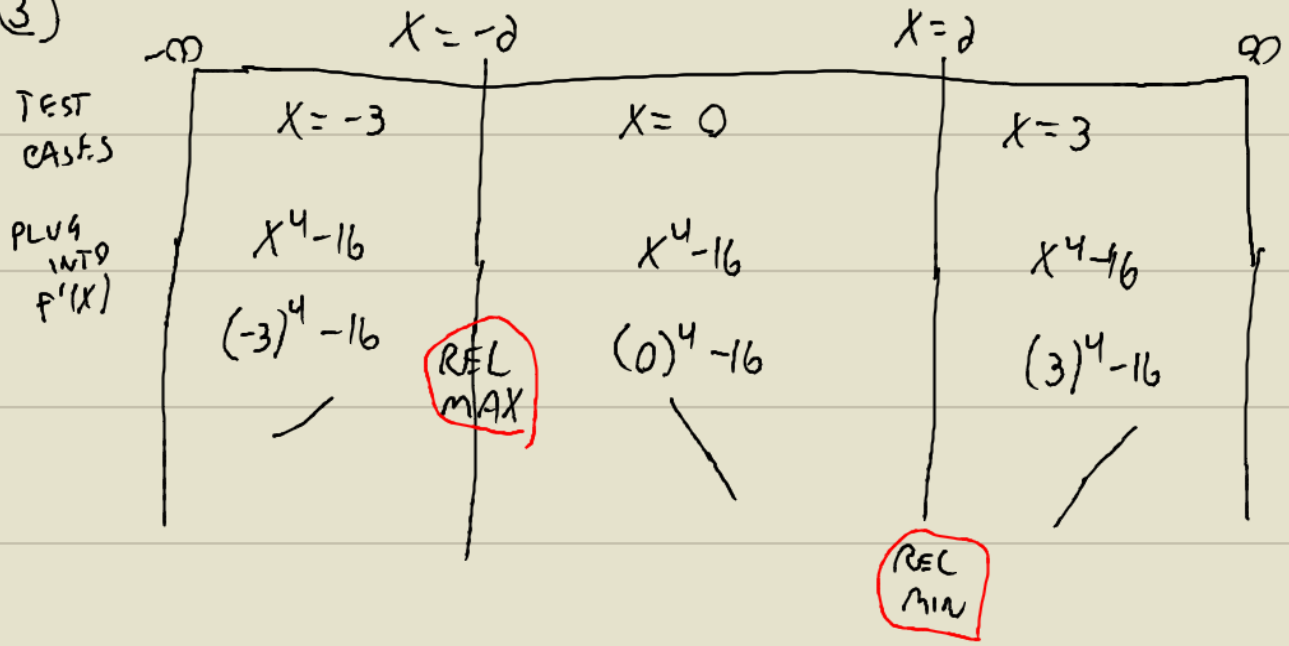
$x^2+4=0 \quad x+2=0 \quad x-2=0$

$x^2 = -4 \qquad x = -2 \qquad x = 2$

$x = \pm\sqrt{-4}$ C.V.'s

~~$x = \pm 2i$~~

③



④

REL MAX

$x = -2$

$f(x) = \frac{1}{5}x^5 - 16x$

$y = \frac{1}{5}(-2)^5 - 16(-2)$

$= \frac{-32}{5} + 32$

$= \frac{128}{5}$

REL MAX $\left(-2, \frac{128}{5}\right)$

REL MIN

$x = 2$

$f(x) = \frac{1}{5}x^5 - 16x$

$y = \frac{1}{5}(2)^5 - 16(2)$

$= \frac{32}{5} - 32$

$= -\frac{128}{5}$

REL MIN $\left(2, -\frac{128}{5}\right)$