

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

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

$$= x^4 - 16$$

$$\textcircled{2} x^4 - 16 = 0$$

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

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

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

$$x^2 = -4$$

$$x = \pm \sqrt{-4}$$

$$x = \pm 2i$$

$$x = -2$$

$$x = 2$$

C.V.'s

$\textcircled{3}$

	$x = -2$	$x = 2$	
TEST CASES	$x = -3$	$x = 0$	$x = 3$
PLUG INTO $f'(x)$	$x^4 - 16$ $(-3)^4 - 16$ ✓	$x^4 - 16$ $(0)^4 - 16$ ✓	$x^4 - 16$ $(3)^4 - 16$ ✓
	REL MAX	REL MIN	

$\textcircled{4}$

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
 $(-2, \frac{128}{5})$

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
 $(2, \frac{-128}{5})$