OCT. 28TH/16

Ex. 1 → (-1, 37) is absolute max
(1, 5) local max
(3, -27) local min
(3, -27) absolute min

Ex 2 → $f(x) = 3x^4 - 6x^2$ on $[-2, 3]$

$f'(x) = 12x^3 - 12x = 0$

$12x(x^2 - 1) = 0$

$x = 0, \pm 1$

$(0, 0), (1, -3), (-1, -3)$

f is a polynomial, thus, f is differentiable everywhere
→ no other C.U.S.

Ex. 3 → $f(x) = x^{3/5}(4 - x)$ $[-1, 4]$

$f'(x) = 3/5\ x^{-2/5}(4 - x) - x^{3/5}$

$= \frac{3(4-x)}{5x^{2/5}} - x^{3/5} \times \frac{5x^{2/5}}{5x^{2/5}}$

$= \frac{12 - 3x - 5x}{5x^{2/5}} = \frac{12 - 8x}{5x^{2/5}}$

$f'(x) = 0 \Rightarrow 12 - 8x = 0 \Rightarrow x = 3/2$

$f'(x)$ DNE when $5x^{2/5} = 0 \Rightarrow 0 = x$

$\therefore$ $\boxed{x = 0, 3/2}$ are C.U.'S.