

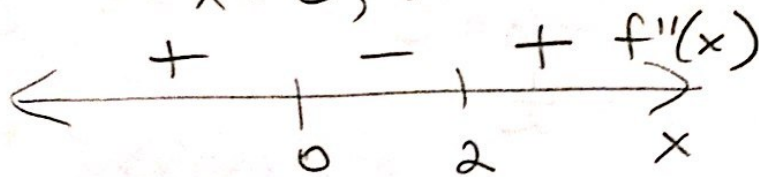
c) $f(x) = x^4 - 4x^3$

$f'(x) = 4x^3 - 12x^2$

$f''(x) = 12x^2 - 24x = 0$

$12x(x - 2) = 0$

$x = 0, 2$



CC↑: $(-\infty, 0) \cup (2, \infty)$

CC↓: $(0, 2)$

POI: $(0, 0)$
 $(2, -16)$

WU

d) $f(x) = \frac{6}{x^2 + 3}$

$f'(x) = \frac{(\cancel{x^2 + 3})(0) - 6(2x)}{(x^2 + 3)^2}$

$f'(x) = \frac{-12x}{(x^2 + 3)^2}$

CC↑:

$(-\infty, -1) \cup (1, \infty)$

b/c $f''(x) > 0$

CC↓: $(-1, 1)$

b/c $f''(x) < 0$

POI: $(-1, \frac{3}{2})$
 $(1, \frac{3}{2})$

$f''(x) = \frac{(x^2 + 3)^2 \cdot (-12) - [(-12x)(2(x^2 + 3) - 2x)]}{(x^2 + 3)^4}$

$f''(x) = \frac{-12(x^2 + 3)^2 + 12x \cdot 4x(x^2 + 3)}{(x^2 + 3)^4}$

$f''(x) = \frac{(x^2 + 3)(-12(x^2 + 3) + 48x^2)}{(x^2 + 3)^4}$

$-12x^2 - 36 + 48x^2$

$f''(x) = \frac{36x^2 - 36}{(x^2 + 3)^3}$

$36x^2 = 36$

$x = \pm 1$

$x^2 + 3 = 0 \quad x$

