

4. $f'(x) = \frac{10-5x}{3x^{1/3}}$ $P' = -5$
 $Q' = 3 \cdot \frac{1}{3} x^{-2/3} = \frac{1}{x^{2/3}}$

① CONCAVITY

$$\frac{f'(Q) - P(Q)'}{Q^2}$$

$$f''(x) = \frac{-5 \cdot 3x^{1/3} - (10-5x) \left(\frac{1}{x^{2/3}} \right)}{[3x^{1/3}]^2}$$

$$= \frac{-15x^{1/3} - \frac{10-5x}{x^{2/3}}}{9x^{2/3}}$$

$$= \frac{-15x^{1/3} \cdot x^{2/3} - \frac{10-5x}{x^{2/3}} \cdot x^{2/3}}{9x^{2/3} \cdot x^{2/3}}$$

$$= \frac{-15x - (10-5x)}{9x^{4/3}}$$

$$= \frac{-15x - 10 + 5x}{9x^{4/3}}$$

$$f''(x) = \frac{(-10x - 10)}{(9x^{4/3})}$$

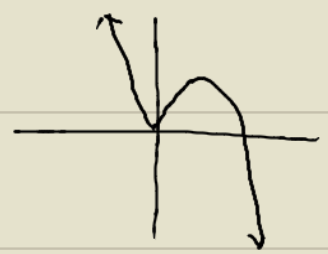
$-10x - 10 = 0$ $9x^{4/3} = 0$
 $-10 = 10x$
 $-1 = x$ $x = 0$

CONC UP $(-\infty, -1)$
 CONC DOWN $(-1, 0)$
 CONC DOWN $(0, \infty)$

⑩ POI

$(-1, 6)$

⑪



$x = -3$	$x = -\frac{1}{3}$	$x = 1$
POS ∪	NEG ∩	NEG ∩
	POI	

PLUG INTO $f''(x)$