4. (cont.)

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

$P' = -5$

$Q' = 3 \cdot \frac{1}{3} x^{-\frac{2}{3}} = \frac{1}{x^{2/3}}$

$\frac{P'Q - PQ'}{Q^2}$

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

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

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

$$= \frac{-15x^1 - (10-5x)}{9x^{4/3}}$$

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

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

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

$-10 = 10x$ $\quad x = 0$

$-1 = x$

$\sqrt[3]{x^4}$

$$y'' = \frac{-10x - 10}{9x^{4/3}}$$

$-\infty$	$x=-1$	$x=0$	∞
$x=-2$	$x=-.1$	$x=1$	
$\frac{-10x-10}{+}$	$\frac{-10x-10}{+}$	$\frac{-10x-10}{+}$	
$\cup$	POI $\cap$	$\cap$	

Conc up $(-\infty, -1)$
Conc down $(-1, 0)$
Conc down $(0, \infty)$

$x = -1$

$y = 5x^{\frac{2}{3}} - x^{\frac{5}{3}}$

$y = 5(-1)^{\frac{2}{3}} - (-1)^{\frac{5}{3}}$

$y = 5\sqrt[3]{(-1)^2} - \sqrt[3]{(-1)^5}$

$= 5 - (-1)$

$= 6$

POI: $(-1, 6)$