

$$4) \int_{-8}^{-1} \left(\frac{x-x^2}{2\sqrt[3]{x}} \right) dx = \int_{-8}^{-1} \left(\frac{x}{2x^{1/3}} - \frac{x^2}{2x^{1/3}} \right) dx$$

$$= \frac{1}{2} \int_{-8}^{-1} (x^{2/3} - x^{5/3}) dx = \frac{1}{2} \left[\frac{3x^{5/3}}{5} - \frac{3x^{8/3}}{8} \right]_{-8}^{-1}$$

$$= \frac{1}{2} \left[\left(\frac{-3}{5} - \frac{3}{8} \right) - \left(\frac{3(-8)^{5/3}}{5} - \frac{3(-8)^{8/3}}{8} \right) \right]$$

$$= \frac{1}{2} \left(\frac{-39}{40} + \frac{96}{5} + 96 \right) = \frac{4569}{80}$$

$$5) \int_{\pi/4}^{\pi/2} (2 - \csc^2 x) dx = 2x + \cot x \Big|_{\pi/4}^{\pi/2}$$

$$= \left[\pi + \cot \frac{\pi}{2} \right] - \left[\frac{2\pi}{4} + \cot \frac{\pi}{4} \right]$$

$$= (\pi + 0) - \left(\frac{\pi}{2} + 1 \right)$$

$$= \pi - \frac{\pi}{2} - 1$$

$$\frac{\pi}{2} - 1$$