


Solution

$$\frac{d}{dx}(\sqrt[3]{x^2}) = \frac{2x}{3(x^2)^{\frac{2}{3}}}$$

Steps

$$\frac{d}{dx}(\sqrt[3]{x^2})$$

Apply the chain rule: $\frac{df(u)}{dx} = \frac{df}{du} \cdot \frac{du}{dx}$ 

$$f = \sqrt[3]{u}, u = (x^2)$$

$$= \frac{d}{du}(\sqrt[3]{u}) \frac{d}{dx}(x^2)$$

$$\frac{d}{du}(\sqrt[3]{u}) = \frac{1}{3u^{\frac{2}{3}}}$$

Show Steps

$$\frac{d}{dx}(x^2) = 2x$$

Show Steps

$$= \frac{1}{3u^{\frac{2}{3}}} \cdot 2x$$

Substitute back $u = (x^2)$

$$= \frac{1}{3(x^2)^{\frac{2}{3}}} \cdot 2x$$

Simplify $\frac{1}{3(x^2)^{\frac{2}{3}}} \cdot 2x$: $\frac{2x}{3(x^2)^{\frac{2}{3}}}$

Show Steps

$$= \frac{2x}{3(x^2)^{\frac{2}{3}}}$$