

Find the general indefinite integral.¹

$$\int \sqrt[4]{x^5} \, dx$$

$$\begin{aligned}\int \sqrt[4]{x^5} \, dx &= \int x^{5/4} \, dx \\ &= \frac{x^{5/4+1}}{\frac{5}{4}+1} + C \\ &= \frac{x^{9/4}}{\frac{9}{4}} + C \\ &= \frac{4}{9} \cdot x^{9/4} + C \\ &= \frac{4}{9} \sqrt[4]{x^9} + C\end{aligned}$$

Thus,

$$\int \sqrt[4]{x^5} \, dx = \frac{4}{9} x^{9/4} + C = \frac{4}{9} \sqrt[4]{x^9} + C$$

¹Stewart, *Calculus, Early Transcendentals*, p. 408, #6.