

1.3.4

3MS

$$a) \int \frac{dx}{x^2} = \int \frac{1}{x^2} dx = \int x^{-2} dx$$

$$= \frac{1}{-2+1} \cdot x^{-2+1} + C$$

$$= \frac{1}{-1} \cdot x^{-1} + C$$

$$= -x^{-1} + C = -\frac{1}{x} + C$$

$$b) \int \frac{2dx}{x^3} = 2 \int \frac{1}{x^3} dx = 2 \int x^{-3} dx$$

$$= 2 \cdot \frac{1}{-3+1} \cdot x^{-3+1} + C$$

$$= \frac{2}{-2} \cdot x^{-2} + C = -\frac{1}{x^2} + C$$

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$$c) -7 \int \frac{1}{x^5} dx = -7 \int x^{-5} dx$$

$$= -7 \frac{1}{-5+1} x^{-5+1} + C$$

$$= \frac{-7}{-4} x^{-4} + C = \frac{7}{4} \cdot \frac{1}{x^4} + C$$

$$= \frac{7}{4x^4} + C$$

$$d) \int \sqrt{x} dx = \int x^{\frac{1}{2}} dx = \frac{1}{\frac{1}{2}+1} x^{\frac{1}{2}+1} + C$$

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

$$= \frac{2}{3} \sqrt{x^3} + C$$

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$$e) \int \sqrt[3]{x} dx = \int x^{\frac{1}{3}} dx = \frac{1}{\frac{1}{3}+1} x^{\frac{1}{3}+1} + C$$

$$= \frac{1}{\frac{4}{3}} \cdot x^{\frac{4}{3}} + C = \frac{3}{4} \sqrt[3]{x^4} + C$$

$$f) \int \frac{1}{\sqrt{x}} dx = \int \frac{1}{x^{\frac{1}{2}}} dx = \int x^{-\frac{1}{2}} dx$$

$$= \frac{1}{-\frac{1}{2}+1} \cdot x^{-\frac{1}{2}+1} + C = \frac{1}{\frac{1}{2}} x^{\frac{1}{2}} + C$$

$$= 2x^{\frac{1}{2}} + C$$

$$g) \int \frac{1}{x^{\frac{2}{3}}} dx = \int x^{-\frac{2}{3}} dx = \frac{1}{-\frac{2}{3}+1} x^{-\frac{2}{3}+1} + C$$

$$= \frac{1}{\frac{1}{3}} x^{\frac{1}{3}} + C = 3\sqrt[3]{x} + C$$