

$$7x^{7/2}$$

$$7x^{7/2} dx = 7 \int x^{7/2} dx$$

$$\begin{aligned} \text{K) } \int 7x^3 \sqrt{x} dx &= 7 \int x^{3+1/2} dx = 7 \int x^{7/2} dx \\ &= 7 \frac{x^{7/2+1/2}}{7/2+1/2} = 7 \frac{x^4}{4} = \frac{7x^4}{4} + C \end{aligned}$$

$$\begin{aligned} \text{L) } \int 4x^3 + x^2 dx &= \frac{4x^{3+1}}{3+1} + \frac{x^{2+1}}{2+1} \\ &= \frac{4x^4}{4} + \frac{x^3}{3} = x^4 + \frac{x^3}{3} + C \end{aligned}$$

$$\begin{aligned} \text{M) } \int 3u^5 - 2u^3 dx &= \frac{3u^{5+1}}{5+1} - \frac{2u^{3+1}}{3+1} \\ &= \frac{3u^6}{6} - \frac{2u^4}{4} = \frac{u^6}{2} - \frac{u^4}{2} + C \end{aligned}$$

$$\text{N) } \int y^3 (2y^2 - y) dy$$

$$2y^5 - y^4 = \frac{2y^{5+1}}{5+1} - \frac{y^{4+1}}{4+1} = \frac{2y^6}{6} - \frac{y^5}{5} = \frac{y^6}{3} - \frac{y^5}{5} + C$$

$$\text{K) } \int 7x^3 \sqrt{x} dx$$

$$\int 4x^3 + x^2 dx$$

~~$\int 3x^2 - 2x^3 dx$~~

~~$\int 5x^3 (2x^2 - 3) dx$~~

0) $\int x^4 (5 - x^2) dx$

$5x^4 - x^6 = \frac{5x^{4+1}}{4+1} - \frac{x^{6+1}}{6+1} = \frac{5x^5}{5} - \frac{x^7}{7} = x^5 - \frac{x^7}{7} + C$

1) $\int (3 - 2t + t^2) dt$

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

2) $\int \sqrt{x} (x+1) dx$

$x^{1/2} \cdot x^{2/2} + x^{2/2} = \frac{2x^{3/2+2/2}}{3/2+2/2} + \frac{x^{5/2}}{5/2} = \frac{2x^{5/2}}{5} + C$

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

$\frac{2x^{5/2}}{5} + \frac{2x^{3/2}}{3} + C$

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$$A) \int 3x^4 dx = \frac{3x^{4+1}}{4+1} \Rightarrow \frac{3x^5}{5} + C$$

$$B) \int 2x^7 dx = \frac{2x^{7+1}}{7+1} = \frac{2x^8}{8} = \frac{x^8}{4} + C$$

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

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

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

$$\frac{x^{-5+1}}{-5+1} = \frac{x^{-4}}{-4} = -\frac{1}{4x^4} + C$$

$$E) \int \frac{3}{5} x^6 dx = \frac{3}{5} \int x^6 dx$$

$$\frac{3}{5} \cdot \frac{x^{6+1}}{6+1} = \frac{3x^7}{5 \cdot 7} = \frac{3x^7}{35} + C$$

$$F) \int \frac{3}{t^5} dt = 3 \int t^{-5} dt$$

$$\frac{3 \cdot t^{-5+1}}{-5+1} = \frac{3t^{-4}}{-4} = -\frac{3}{4t^4} + C$$

$$G) \int 5u^{3/2} du = \frac{5 \cdot u^{3/2 + 2/2}}{3/2 + 2/2} = 5 \cdot \frac{u^{5/2}}{5/2}$$

$$\frac{10u^{5/2}}{5} = \underline{\underline{2u^{5/2} + C}}$$

$$H) \int 10\sqrt[3]{x^2} dx = \int 10x^{2/3} dx = 10 \int x^{2/3} dx$$

$$= C(10) \frac{x^{2/3 + 3/3}}{2/3 + 3/3} = C(10) \frac{x^{5/3}}{5/3} = \frac{30x^{5/3}}{5} = \underline{\underline{6x^{5/3} + C}}$$

$$I) \int \frac{2}{\sqrt[3]{x}} dx = 2 \int \sqrt[3]{x} dx$$

$$(2) \int x^{1/3} dx = \frac{6x^{2/3}}{1/3 + 2/3} + C = \underline{\underline{3x^{2/3} + C}}$$

$$J) \int 6t^2 \sqrt[3]{t} dt = 6t^2 \int t^{1/3} dt = t^{2=6/3} \leftrightarrow \frac{1/3}{+t}$$

$$\int 6t^{7/3} dt \rightarrow 6 \int t^{7/3} dt$$

$$= C(6) \frac{t^{7/3 + 3/3}}{7/3 + 3/3} = \frac{6t^{10/3}}{10/3} = \frac{18t^{10/3}}{10} = \boxed{\underline{\underline{9/5 t^{10/3} + C}}}$$

$$R) \int (8x^4 + 4x^3 - 6x^2 - 8) dx = \frac{8x^{4+1}}{4+1} + \frac{4x^{3+1}}{3+1} - \frac{6x^{2+1}}{2+1} - 8x$$

$$\frac{8x^5}{5} + \frac{4x^4}{4} - \frac{6x^3}{3} - 8x = \frac{8x^5}{5} + x^4 - 2x^3 - 8x + C$$

$$S) \int (2 + 3x^2 - 8x^3) dx = 2x + \frac{3x^{2+1}}{2+1} - \frac{8x^{3+1}}{3+1}$$

$$= 2x + \frac{3x^3}{3} - \frac{8x^4}{4} =$$

$$\frac{2x + x^3 - 2x^4 + C}{}$$

$$T) \int \sqrt[3]{x} (x+1) dx = \int x^{1/3} x^{2/3} = \int x^{4/3} = \frac{x^{4/3+3/3}}{4/3+3/3} = \frac{x^{7/3}}{7/3} = \frac{3x^{7/3}}{7}$$

$$\frac{x^{1/3+3/3}}{1/3+3/3} = \frac{x^{4/3}}{4/3} = \frac{3x^{4/3}}{4}$$

$$\frac{3x^{7/3}}{7} + \frac{3x^{4/3}}{4} + C$$

$$U) \int (ax^2 + bx + c) dx = \frac{ax^{2+1}}{2+1} + \frac{bx^{1+1}}{1+1} + cx$$

$$= \frac{ax^3}{3} + \frac{bx^2}{2} + cx = \frac{ax^3}{3} + \frac{bx^2}{2} + cx$$

$$V) \int (\sqrt{x} - \frac{1}{\sqrt{x}}) dx$$

$$\int x^{1/2} dx - \int x^{-1/2} dx$$

$$\frac{x^{1/2+2/2}}{1/2+2/2} - \frac{x^{-1/2+2/2}}{-1/2+2/2} \Rightarrow \frac{x^{3/2}}{3/2} - \frac{x^{1/2}}{1/2} \Rightarrow \frac{2x^{3/2}}{3} - 2x^{1/2} + C$$