

$$\int 2x^3 dx = 2 \int x^3 dx = 2 \int \frac{x^{3+1}}{3+1} + C = 2 \cdot \frac{x^4}{4} + C = \frac{x^4}{2} + C$$

$$\int 4x^2 dx = 4 \int x^2 dx = 4 \int \frac{x^{2+1}}{2+1} + C = 4 \cdot \frac{x^3}{3} + C = \frac{4x^3}{3} + C$$

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

$$\int 5x^2 dx = 5 \int x^2 dx = 5 \int \frac{x^{2+1}}{2+1} + C = 5 \int \frac{x^3}{3} + C = \frac{5x^3}{3} + C$$

$$\int 4x^3 dx = 4 \int x^3 dx = 4 \int \frac{x^{3+1}}{3+1} + C = 4 \int \frac{x^4}{4} + C = x^4 + C$$

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

$$\int 4x dx = 4 \int x dx = 4 \int \frac{x^{1+1}}{1+1} + C = 4 \frac{x^2}{2} + C = 2x^2 + C$$

$$\int 5x^5 dx = 5 \int \frac{x^{5+1}}{5+1} + C = 5 \int \frac{x^6}{6} + C = \frac{5x^6}{6} + C$$

$$\int 7x^2 dx = 7 \int \frac{x^{2+1}}{2+1} + C = 7 \int \frac{x^3}{3} + C = \frac{7x^3}{3} + C$$

$$\int 8x^6 dx = 8 \int \frac{x^{6+1}}{6+1} + C = \frac{8x^7}{7} + C$$

$$\int 2x^4 dx = 2 \int \frac{x^{4+1}}{4+1} + C = \frac{2 \cdot x^5}{5} + C = \frac{2x^5}{5} + C$$

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

$$\int x^4 + x^3 + x^2 + x + 5 dx = \int \frac{x^{4+1}}{4+1} + \int \frac{x^{3+1}}{3+1} + \int \frac{x^{2+1}}{2+1} + \int \frac{x^{1+1}}{1+1} + 5 \int dx$$

$$= \int \frac{x^5}{5} + \int \frac{x^4}{4} + \int \frac{x^3}{3} + \int \frac{x^2}{2} + 5x + C$$

$$\underline{\underline{\frac{x^5}{5} + \frac{x^4}{4} + \frac{x^3}{3} + \frac{x^2}{2} + 5x + C}}$$

$$\int 2x^4 + 3x^3 + 2x^2 + x + 5 dx = \frac{2x^5}{5} + \frac{3x^4}{4} + \frac{2x^3}{3} + \frac{x^2}{2} + 5x + C$$

$$\int \frac{2x^4 + 3x^3 + 2x^2 + x + 5}{3x} dx = \int \left(\frac{2x^4}{3x} + \frac{3x^3}{3x} + \frac{2x^2}{3x} + \frac{x}{3x} + \frac{5}{3x} \right) dx$$

$$= \int \frac{2x^3}{3} + x^2 + \frac{2}{3}x + \frac{1}{3} + \frac{5}{3x}$$

$$= \frac{2}{3} \int \frac{x^{3+1}}{3+1} + \int \frac{x^{2+1}}{2+1} + \frac{2}{3} \int \frac{x^{1+1}}{1+1} + \frac{1}{3} \int dx + \frac{5}{3} \int \frac{x^{-1+1}}{-1+1} + C$$

$$= \frac{2}{3} \int \frac{x^4}{4} + \int \frac{x^3}{3} + \frac{2}{3} \int \frac{x^2}{2} + \frac{1}{3} \int x + \frac{5}{3} \int \cancel{\ln x} + C$$

$$= \frac{2}{3} \cdot \frac{1}{4} x^4 + \frac{x^3}{3} + \frac{2}{3} \cdot \frac{1}{2} x^2 + \frac{1}{3} x + C$$

$$\frac{2}{12} x^4 + \frac{x^3}{3} + \frac{2}{6} + \frac{1}{3} x + C = \frac{x^4}{6} + \frac{x^3}{3} + \frac{x^2}{3} + \frac{x}{3} + C$$

$$\underline{\underline{= \frac{x^4}{6} + \frac{x^2 + x^2 + x}{3} + C}}$$