

INTEGRALS

2-Feb-24

LUNA G

$$① \int x^3 dx = \frac{x^4}{4} + C$$

$$② \int \sqrt{9} dx = \sqrt{9} X + C = 3X + C$$

$$③ \int x^{-2} dx : \frac{x^{-2}}{-1} \Rightarrow -\frac{x^{-2}}{1} \Rightarrow -\frac{1}{x} + C$$

(dividing signs)

$$④ \int \frac{dx}{3} : \int \frac{1}{3} dx = \frac{1}{3} X + C = \frac{X}{3} + C$$

$$⑤ \int 6x^2 dx : 6 \int x^2 dx = \frac{6x^3}{3} = 2x^3 + C$$

$$⑥ \int 3x^2 dx : 3 \int x^2 dx = \frac{3x^3}{3} = x^3 + C$$

$$⑦ \int \frac{2x^3}{3} dx : \frac{2}{3} \int x^3 dx = \frac{2}{3} \cdot \frac{x^4}{4} = \frac{2}{12} x^4 = \frac{x^4}{6} + C$$

$$⑧ \int \frac{x^{-6}}{5} dx : \frac{1}{5} \int x^{-6} dx = \frac{\frac{1}{5} x^{-5}}{-5} + C = -\frac{x^{-5}}{25} \Rightarrow -\frac{1}{25x^5} + C$$

$$⑨ \int \frac{x^2}{9} dx : \frac{1}{9} \int x^2 dx = \frac{\frac{1}{9} x^3}{3} = \frac{x^3}{27} + C$$

$$⑩ \int \frac{\pi dx}{2} : \frac{\pi X}{2} + C$$

INTEGRALES

08-Feb-24

LUNA GL

$$(11) \int \frac{2}{x^3} dx = 2 \int \frac{1}{x^3} dx = 2 \int x^{-3} dx = -\frac{2x^{-2}}{2 \cdot 2} = -\frac{2}{2x^2} = -\frac{1}{x^2} + C$$

$$(12) \int \frac{3}{2x} dx = \frac{3}{2} \int \frac{1}{x} dx = \frac{3}{2} \cdot \ln x = \frac{3 \ln x}{2} + C$$

$$(13) \int \frac{x^3}{3x} dx = \frac{1}{3} \int \frac{x^3}{x} dx \Rightarrow \frac{1}{3} \int x^2 dx = \frac{1 \cdot x^3}{3 \cdot 3} = \frac{x^3}{9} + C$$

$$(14) \int \frac{x^4}{\sqrt{5}} dx = \frac{1}{\sqrt{5}} \int x^4 dx = \frac{1 \cdot x^5}{\sqrt{5} \cdot 5} = \frac{x^5}{5\sqrt{5}} + C$$

$$(15) \int \frac{x^{-5}}{4} dx = \frac{1}{4} \int x^{-5} dx = \frac{1 \cdot x^{-4}}{4 \cdot -4} = -\frac{x^{-4}}{16} = -\frac{1}{16x^4} + C$$

$$(16) \int \sqrt[4]{x^3} dx = \int x^{\frac{3}{4}} dx = \frac{x^{\frac{7}{4}}}{\frac{7}{4}} = \frac{4x^{\frac{7}{4}}}{7} + C$$

$$(17) \int x^{-2/3} dx = 3\sqrt[3]{x} + C$$

$$(18) \int \frac{x^{-3}}{2} dx = \frac{1}{2} \int x^{-3} dx = \frac{1 \cdot x^{-2}}{2 \cdot -2} = -\frac{x^{-2}}{4} = -\frac{1}{4x^2} + C$$

$$(19) \int \frac{dx}{x-3} = \int \frac{1}{x-3} dx = \ln|x-3| + C$$

$$(20) \int 3x^{-1/4} dx = 3 \int x^{-1/4} dx = \frac{3 \cdot x^{3/4}}{\frac{3}{4}} = \frac{12x^{3/4}}{3} = 4\sqrt[4]{x^3} + C$$

INTEGRALES

09-Feb-23

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$$(21) \int \frac{1}{x^6} dx = \int x^{-6} dx = \frac{x^{-5}}{-5} = -\frac{1}{5x^5} + C$$

$$(22) \int \frac{2 dx}{3x^{-5}} = \frac{2}{3} \int \frac{1}{x^{-5}} dx = \frac{2}{3} \int x^5 dx = \frac{2}{3} \cdot \frac{x^6}{6} = \frac{2x^6}{18} = \frac{x^6}{9} + C$$

$$\textcircled{23} \int \frac{dx}{6} = \int \frac{1}{6} dx = \frac{1}{6} x + C$$

$$(24) \int \frac{3x^2}{5x^6} dx = \frac{3}{5} \int \frac{x^2}{x^6} dx \rightarrow \frac{3}{5} \int \frac{1}{x^4} dx = \frac{3}{5} \int x^{-4} dx = \frac{3}{5} \cdot \frac{x^{-3}}{-3}$$

$$(25) \int 6x^3 dx = 6 \int x^3 dx = \frac{6 \cdot x^4}{4} = \frac{6x^4}{4} = \frac{3x^4}{2} + C$$

$$(26) \int \frac{4x^8 dx}{3x^3} = \frac{4}{3} \int \frac{x^8}{x^3} dx \Rightarrow \frac{4}{3} \int x^5 dx = \frac{4}{3} \cdot \frac{x^6}{6} = \frac{4x^6}{18} = \frac{2x^6}{9} + C$$

$$(27) \int 6\pi x^2 dx = 6\pi \int x^2 dx = 6\pi \cdot \frac{x^3}{3} = \frac{6\pi x^3}{3} = \underline{2\pi x^3 + C}$$

$$(28) \int \frac{x^{-7} dx}{3} = \frac{1}{3} \int x^{-7} dx = \frac{1}{3} \cdot \frac{x^{-6}}{-6} = \frac{x^{-6}}{-18} = -\frac{1}{18x^6} + C$$

(29) $\int 3\sqrt{3x^3} dx = 3 \int (3x^3)^{\frac{1}{2}} dx = 3 \cdot \frac{(3x^3)^{\frac{3}{2}}}{\frac{3}{2}} = \frac{3 \cdot 2(3x^3)^{\frac{3}{2}}}{3} = 2(3x^3)^{\frac{3}{2}} + C$

$$(30) \int \frac{3 dx}{4\sqrt{2x^3}} = \frac{3}{4} \int \frac{1}{(2x^3)^{\frac{1}{2}}} dx \Rightarrow \frac{3}{4} \int (2x^3)^{-\frac{1}{2}} dx = \frac{3}{4} \cdot \frac{(2x^3)^{\frac{1}{2}}}{\frac{1}{2}} = \frac{3\sqrt{2x^3}}{2} + C = \frac{6(2x^3)^{\frac{1}{2}}}{4} = \frac{3}{4} \cdot 2(2x^3)^{\frac{1}{2}}$$

Resolver por separado

13-Elo-24

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

$$x^2 + 3x + C$$

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

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

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

$$⑤ \int (x + \sqrt{5}) dx = \frac{x^2}{2} + \sqrt{5}x + C$$

$$⑥ \int (1 + \pi) dx = x + \pi x + C$$

$$⑦ \int (9x^2 + x^2 + 2) dx = 9 \cdot \frac{x^3}{3} + \frac{x^3}{3} + 2x = 3x^3 + \frac{x^3}{3} + 2x + C$$

$$⑧ \int (x + \sqrt{x}) dx = \frac{x^2}{2} + \frac{x^{\frac{3}{2}}}{\frac{3}{2}} = \frac{x^2}{2} + \frac{2x^{\frac{3}{2}}}{3} = \frac{x^2}{2} + \frac{2\sqrt{x^3}}{3} + C$$

$$⑨ \int \left(\frac{1}{x^2} + 2x^{\frac{2}{3}} + \sqrt[3]{x} \right) dx = \frac{x^{-1}}{-1} + 2 \cdot \frac{x^{\frac{5}{3}}}{\frac{5}{3}} + \frac{x^{\frac{4}{3}}}{\frac{4}{3}} = -\frac{1}{x} + \frac{6\sqrt[3]{x^5}}{5} + \frac{3\sqrt[3]{x^4}}{4} + C$$

13-Feb-24

LUNA G.

$$\textcircled{10} \int (6x^5 + 3x + 5x^{-3} + 3) dx = 6 \cdot \frac{x^6}{6} + 3 \cdot \frac{x^2}{2} + 5 \cdot \frac{x^{-2}}{-2} + 3x + C = x^6 + \frac{3x^2}{2} - \frac{5}{2x^2} + 3x + C$$

$6 \int x^5 dx \mid 3 \int x dx \mid 5 \int x^{-3} dx$

$$\textcircled{11} \int (5x^4 - 8x^3 + 9x^2 - 2x + 5) dx = \frac{5 \cdot x^5}{5} - \frac{8 \cdot x^4}{4} + \frac{9 \cdot x^3}{3} - \frac{2 \cdot x^2}{2} + 5x + C = x^5 - 2x^4 + 3x^3 - x^2 + 5x + C$$

$5 \int x^4 dx \mid -8 \int x^3 dx \mid 9 \int x^2 dx \mid -2 \int x dx \mid 5 \int 1 dx$

$$\textcircled{12} \int (x+1)^2 dx = \frac{x^3}{3} + 2 \cdot \frac{x^2}{2} + (1)x = \frac{x^3}{3} + x^2 + x + C$$

$(a \pm b)^2 = a^2 \pm 2ab + b^2$

$$\textcircled{13} \int \left(\frac{3x^3}{x} - \frac{2x^4}{x^2} \right) dx = 3 \cdot \frac{x^3}{3} - 2 \cdot \frac{x^3}{3} = x^3 - \frac{2x^3}{3}$$

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

$$\textcircled{14} \int \left(\frac{6x^2}{2x} + 3 \right) dx = \frac{6}{2} \cdot \frac{x^2}{2} + 3x + C = \frac{3x^2}{2} + 3x + C$$

$\frac{6}{2} \int x dx$

$$\textcircled{15} \int (3x^2 - 2) dx = 3 \cdot \frac{x^3}{3} - 2x = x^3 - 2x + C$$

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