CALCULO INTEGRAL Ola guapo ♡ 13 06 22

$\int x4\, dx = \frac{4x^{4+1}}{4+1} = \frac{4x^5}{5} + C$

$y = \frac{4x^5}{5} = \frac{20x^{5-1}}{5} = 4\cancel{x}^4$

$\boxed{\text{FORMÚLA} \quad x^n dx \Rightarrow \frac{x^{n+1}}{n+1} + C}$

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

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

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

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) $\int 3/5\, x^6 dx = 3/5 \int x^6 dx = 3/5 \cdot \frac{x^{6+1}}{6+1} = \frac{3 \cdot x^7}{5 \cdot 7} = \frac{3x^7}{35} + C$

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

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

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

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

$10 \cdot \frac{x^{2/3+3/3}}{2/3+3/3} = 10 \cdot \frac{x^{5/3}}{5/3} = \frac{30\,x^{5/3}}{5} = 6x^{5/3} + C$

I) $\int \frac{2}{\sqrt[3]{x}}\,dx = \int 2x^{-1/3}\,dx = 2 \cdot \frac{x^{-1/3+3/3}}{-1/3+3/3} = \frac{2 \cdot x^{2/3}}{2/3} = \frac{6\,x^{2/3}}{2} = 3x^{2/3} + C$

$t^{2} = 6/3 + 1/3$ $+\,t$

J) $\int 6t^2\sqrt[3]{t}\,dt = \int 6\underbrace{t^{2}\,t^{1/3}} dt = \int 6t^{7/3}\,dt =$

$6\int t^{7/3}\,dt = 6 \cdot \frac{t^{7/3+3/3}}{7/3+3/3} = \frac{6t^{10/3}}{10/3} = \frac{18\,t^{10/3}}{10} = 9/5^{10/3} + C$

K) $\int 7x^3\sqrt{x}\,dx \quad \int 7x^3 x^{\frac{1}{2}}\,dx = 7x^{\frac{7}{2}}\,dx = 7\int x^{\frac{7}{2}}\,dx =$

$7 \cdot \frac{x^{\frac{7}{2}+\frac{2}{2}}}{\frac{7}{2}+\frac{2}{2}} = \frac{7x^{\frac{9}{2}}}{\frac{9}{2}} = \frac{14x^{\frac{9}{2}}}{9} + C$

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

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

M) $\int 3u^5 - 2u^3\,dx = 3\int u^5 = 3 \cdot \frac{u^{5+1}}{5+1} = \frac{3u^6}{6} = \frac{u^6}{2}$

$2\int u^3 = 2 \cdot \frac{u^{3+1}}{3+1} = \frac{2u^4}{4} = \frac{u^4}{2}$

$\frac{u^6}{2} - \frac{u^4}{2} + C$

N) $\int y^3(2y^2 - y)\,dy$

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

$\int y^4 = \frac{y^{4+1}}{4+1} = \frac{y^5}{5} =$

$\frac{y^6}{3} - \frac{y^5}{5} + C$

o) $\int x^4 (5-x^2)\, dx \qquad \int 5x^4 - x^6 =$

$5 \cdot \frac{x^{4+1}}{4+1} = \frac{\cancel{5}x^5}{\cancel{5}} = x^5$

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

$\frac{x^{6+1}}{6+1} = \frac{x^7}{7}$

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

$3t - 2t + t^2 =$

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

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

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

q) $\int \sqrt{x}\, (x+1)\, dx =$

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

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

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

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

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R) $\int (8x^4 + 4x^3 - 6x^2 - 8)\,dx$ ← Directo

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

s) $\int (2 + 3x^2 - 8x^3)\,dx$ ← Directo

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

T) $\int \sqrt[3]{x}\,(x+1)\,dx$

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

$\frac{x^{\frac{4}{3}+\frac{3}{3}}}{\frac{4}{3}+\frac{3}{3}} = \frac{x^{\frac{7}{3}}}{\frac{7}{3}} = \frac{3x^{\frac{7}{3}}}{7}$

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

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

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u) $(ax^2 + bx + c)\,dx$ ← Directo

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

v) $\int \left(\sqrt{x} - \frac{1}{\sqrt{x}}\right) dx$

$x^{\frac{1}{2}} - \frac{1}{x^{\frac{1}{2}}}$

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

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

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