Integrali

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Ma perché ho ripassato prima gli integrali per parte
E poi DOPO le regole basilari degli integrali ;-;

$$\int 4x = 4x + c$$

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

$$\int x^3 = \frac{x^4}{4} + c$$

$$\int 8 * x^3 = 8 \int x^3 = 8 * \frac{x^4}{4} + c$$

$$\int 5x^6 = 5 * \frac{x^7}{7} + c$$

$$\int 4x^3 + 8x^2 - 9 = \frac{4x^4}{4} + \frac{8x^3}{3} - 9x + c$$

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

$$\int \sqrt[3]{x^4} = \int x^{\frac{4}{3}} = \frac{1}{\frac{4}{3}+1} * x^{\frac{4}{3}+1} = \frac{3}{7} x^{\frac{7}{3}}$$

$$\int (3x-1)^2 = \int (3x-1)(3x-1) = \int 9x^2 - 6x + 1 = \frac{9x^3}{3} - \frac{6x^2}{2} + x + c$$

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

$$\int \frac{5}{x^4} = 5 \int \frac{1}{x^4} = 5 \int x^{-4} = 5 * \frac{1}{-3} x^{-3} = \frac{5}{-3x^3} + c$$

$$\int \frac{1}{x} = \ln x$$

$$\int \frac{1}{x-3} = \ln(x-3)$$

$$\int e^{4x} = \frac{e^{4x}}{4}$$

$$\int \cos x = \sin x$$

$$\int \sin x = -\cos x$$

$$\int \cos 3x = \frac{\sin 3x}{3}$$

$$5 \int x(x^2+3)^4 = 5 \int x(x^8 + 12x^6 + 54x^4 + 108x^2 + 81)$$

$$= 5 \int x^9 + 12x^7 + 54x^5 + 108x^3 + 81x = 5\left(\frac{x^{10}}{10} + 12 * \frac{x^7}{10} + 54 * \frac{x^5}{5} + 108 * \frac{x^3}{3} + 81 * \frac{x^2}{2}\right)$$

$$\int \tan x = \int \frac{\sin x}{\cos x} = \int \frac{f'(x)}{f(x)} = \int \frac{-\cos x}{\cos x} = -\int \frac{\cos x}{\cos x} = -\ln \cos x + c$$