I

a) $\int 1 \, dx$

- $\int$: Símbolo de la integral
- dx: diferencial de "x" → porque vamos a derivar respecto a la letra "x"

$$= \int 1 \, dx = x + c$$

d

b) $$\int x^2 \, dx = \frac{x^{2+1}}{2+1} + c = \frac{x^3}{3} + c$$

c) $$\int x^9 \, dx = \frac{x^{9+1}}{9+1} = \frac{x^{10}}{10} + c$$

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https://youtube.com/@Academiatemas?si=fOJYAN4EiDXg6yaI

d) $\int \frac{dx}{x^5} = \int \frac{1}{x^5} \cdot dx = \int \frac{1 \cdot x^{-5}}{1} \cdot dx = \frac{x^{-5+1}}{-5+1} = \frac{x^{-4}}{-4}$

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

e) $\int \frac{dx}{\sqrt[6]{x}} = \int \frac{1}{\sqrt[6]{x}} \, dx = \int \frac{1}{x^{\frac{1}{6}}} \, dx = \int x^{-\frac{1}{6}} \, dx$

$\frac{\text{Exponente}}{\text{índice}}$

$= \frac{x^{-\frac{1}{6}+1}}{-\frac{1}{6}+1} = \frac{x^{5/6}}{\frac{5}{6}} = \frac{6 \cdot x^{\frac{5}{6}}}{5} = \frac{6 \cdot \sqrt[6]{x^5}}{5} + C$

$$\frac{x^{5/6}}{\frac{5}{6}} = \frac{x^{5/6}}{1} : \frac{5}{6} \qquad \frac{6 \cdot x^{5/6}}{5 \cdot 1} = \frac{6\sqrt[6]{x^5}}{5}$$

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⑧ $$\int \sqrt[7]{x^2}\, dx = \int x^{\frac{2}{7}}\, dx = \frac{x^{\frac{2}{7}+1}}{\frac{2}{7}+1} = \frac{x^{9/7}}{\frac{9}{7}}$$

$$= \frac{7\, x^{9/7}}{9} = \frac{7\sqrt[7]{x^9}}{9} = \frac{7x \cdot \sqrt[7]{x^2}}{9} + c$$

9	7
-7	1
2	

2

a) $\int (x^2 + x)\,dx = \int x^2\,dx + \int x\,dx$

Se pueden separar en tantas integrales como monomios tengamos

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

b) $\int 5 \cdot \cos(x)\,dx = 5 \cdot \int \cos(x)\,dx = 5 \cdot \operatorname{sen}(x) + q$

Las constantes pueden salir fuera

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$\int 5\,dx$

$$\int 5\,dx = 5x$$

$$\int 5\,dx = 5\cdot\int 1\,dx = 5\cdot x = 5x$$

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c) $\int \frac{dx}{8x} = \int \frac{1}{8x}\,dx = \frac{1}{8}\cdot\int \frac{1}{x}\,dx = \frac{1}{8}\int x^{-1}\,dx$

$$\frac{x^{-1+1}}{-1+1} = \frac{x^{0}}{0} = \nexists$$

Este es el único que NO se convierte a exponente $\ominus$

$$\ln x \xrightarrow{d} \frac{1}{x}$$

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

$$= \frac{1}{8}\int \frac{1}{x}\,dx = \frac{1}{8}\cdot \ln|x| + C$$

se pone valor absoluto | | porque un logaritmo no puede ser ni cero ni un Nº negativo.

2 ...

d) $\int \frac{7}{x^3}\,dx = 7\int \frac{1}{x^3}\,dx = 7\int x^{-3}\,dx$

$= 7 \cdot \frac{x^{-3+1}}{-3+1} = 7 \cdot \frac{x^{-2}}{-2} = \frac{7}{-2\,x^{2}} + c$

e) $\int \frac{\sqrt[8]{x^3}}{11}\,dx = \frac{1}{11} \cdot \int \sqrt[8]{x^3}\,dx = \frac{1}{11} \cdot \int x^{3/8}\,dx = \frac{1}{11} \cdot \frac{x^{3/8+1}}{\frac{3}{8}+1}$

$= \frac{1}{11} \cdot \frac{x^{11/8}}{\frac{11}{8}} = \frac{8 \cdot x^{11/8}}{121} = \frac{8 \cdot \sqrt[8]{x^{11}}}{121} = \frac{8 \cdot x\,\sqrt[8]{x^3}}{121} + q$

f) $\int \left(6e^x + \frac{7}{x}\right)dx = \int 6e^x\,dx + \int \frac{7}{x}\,dx = 6 \cdot \int e^x\,dx + 7 \cdot \int \frac{1}{x}\,dx$

$= 6 \cdot e^x + 7\ln|x| + q$

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

$= 3 \cdot \operatorname{arctg}(x) + x + C$

h) $\int\left(3x^5 - \frac{7}{\sqrt{1-x^2}} + \frac{9}{\cos^2 x}\right)dx = \int 3x^5\,dx - \int \frac{7}{\sqrt{1-x^2}}\,dx + \int \frac{9}{\cos^2 x}\,dx$

$= \frac{3x^6}{6} - 7\int \frac{1}{\sqrt{1-x^2}}\,dx + 9\int \frac{1}{\cos^2 x}\,dx$

$= \frac{3x^6}{6} - 7\operatorname{arcsen}(x) + 9\operatorname{tg}(x) + C$

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i) $\int \left(8 \cdot e^{x} - \frac{5}{3x} + \frac{2}{x^4} \right) dx$

$8e^{x} - \frac{5}{3} \ln|x| - \frac{2}{3x^3} + C$

$\int \frac{2}{x^4} dx = 2 \int x^{-4} dx = 2 \frac{x^{-3}}{-3} = \frac{2}{-3x^3}$

j)

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

$= \frac{5}{-1x}$

$\int \left(2 \operatorname{sen}(x) + \frac{11}{\sqrt{1-x^2}} - \frac{5}{x^2} \right) dx$

$= -2 \cdot \cos(x) + 11 \operatorname{arcsen}(x) + \frac{5}{x} + C$