① b) $\int \frac{dx}{\sqrt[5]{x}} = \int x^{-1/5}\,dx = \frac{x^{4/5}}{4/5} + C = \frac{5\sqrt[5]{x^4}}{4} + C$

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

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

③ $\int 1 \cdot \operatorname{sen}(x-4)\,dx = -\cos|x-4| + C$

mar 14-14:07

⑤ b) $\int \frac{dx}{(x-4)^2} = \int 1\,(x-4)^{-2}\,dx$

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

⑥ $\frac{1}{-2}\int -2\,e^{-2x+9}\,dx = -\frac{1}{2}\,e^{-2x+9} + C$

⑦ $\int \frac{5\,dx}{4x^2+1} \overset{\frac{5}{2}}{=} \int \frac{2}{1+(2x)^2}\,dx$

$\frac{5}{2}\operatorname{arctg}(2x) + C$

mar 14-14:10

⑨ $\int \frac{dx}{\sqrt{4-x^2}}$

$\int \frac{f'(x)}{\sqrt{1-f(x)^2}}\,dx = \operatorname{arcsen} f(x) + C$

$\frac{1}{\sqrt{4}}\int \frac{dx}{\sqrt{4-x^2}} = \frac{1}{2}\int \frac{\frac{1}{2}\,dx}{\sqrt{1-\left(\frac{x}{2}\right)^2}}$

$= \operatorname{arcsen}\frac{x}{2} + C$

mar 14-14:12

⑩ $\int \frac{3}{(x+1)^2}\,dx$

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

$= -\frac{3}{x+1} + C$

mar 14-14:15

11 $\int \frac{\sin x}{\cos^5 x}\,dx$

$-\int -\sin x(\cos x)^{-5}\,dx$

$-\frac{(\cos x)^{-4}}{-4}+C=\frac{1}{4\cos^4 x}+C$

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$\int \frac{2}{4+3x^2}\,dx$

$\int \frac{f'(x)}{1+[f(x)]^2}\,dx=\operatorname{arctg} f(x)+C$

$\frac{1}{4}\int \frac{2}{\frac{4+3x^2}{4}}\,dx=\frac{\cancel{2}\,2}{\cancel{4}\,\sqrt{3}}\int \frac{1}{1+\left(\frac{\sqrt{3}x}{2}\right)^2}\,dx$

$\frac{1}{\sqrt{3}}\operatorname{arctg}\left(\frac{\sqrt{3}x}{2}\right)+C$

mar 14-14:18

Integrales prod

Tienen relación: Inmediata / Sustitución

t = func. de la que tengo la derivada.

No tienen relación PARTES

$\int u\,dv=u\cdot v-\int v\,du$

$u \xrightarrow{D} du$

$dv \xrightarrow{I} v$

u: Log, arctg, Polinomios, Trig, Exp

mar 14-14:23

$\int x\cdot \operatorname{sen}(x^2)\,dx$ TIENEN REL.

Inmediata

$\frac{1}{2}\int 2x\,\sin(x^2)\,dx$

$-\frac{1}{2}\cos(x^2)+C$

Sustitución

$x^2=t \qquad 2x\,dx=1\,dt$

$\int \cancel{x}\,\sin t\,\frac{dt}{2\cancel{x}}$

$\frac{1}{2}\int \sin t\,dt=\frac{1}{2}(-\cos t)+C$

$-\frac{\cos x^2}{2}+C$

mar 14-14:25

$\int x^2 \operatorname{sen} x\,dx$ PARTES

$u = x^2 \longrightarrow du = 2x\,dx$

$dv = \operatorname{sen} x\,dx \quad v = \int \operatorname{sen} x\,dx = -\cos x$

$x^2(-\cos x) - \int -\cos x \cdot 2x\,dx$

$-x^2\cos x + 2\int x\cos x\,dx$

$\int x\cos x\,dx$, Partes

$u = x \quad du = 1\,dx$

$dv = \cos x\,dx \quad v = \int \cos x\,dx = \operatorname{sen} x$

$x\operatorname{sen} x - \int \operatorname{sen} x\,dx =$

$x\operatorname{sen} x + \cos x$

$-x^2\cos x + 2x\operatorname{sen} x + 2\cos x + C$

mar 14-14:27

$\int \ln x\,dx$ PARTES

$u = \ln x \longrightarrow du = \frac{1}{x}\,dx$

$dv = dx \quad v = \int dx \quad v = x$

$\ln x \cdot x - \int x \cdot \frac{1}{x}\,dx$

$x\ln x - \int 1\,dx$

$x\ln x - x + C$

$x(\ln x - 1) + C$

mar 14-14:31

$\int e^x \operatorname{sen} x\,dx =$ Partes

$u = \operatorname{sen} x \longrightarrow du = \cos x\,dx$

$dv = e^x dx \longrightarrow v = \int e^x dx = e^x$

$\operatorname{sen} x \cdot e^x - \int e^x \cos x\,dx$

$\int e^x \cos x\,dx =$

$u = \cos x \longrightarrow du = -\operatorname{sen} x\,dx$

$dv = e^x dx \longrightarrow v = \int e^x dx = e^x$

$= \cos x\, e^x + \int e^x \operatorname{sen} x\,dx$

$\int e$

mar 14-14:33

$\int e^x \operatorname{sen} x\,dx = \operatorname{sen} x \cdot e^x - \cos x e^x - \int e^x \operatorname{sen} x\,dx$

$2\int e^x \operatorname{sen} x\,dx = e^x(\operatorname{sen} x - \cos x)$

$\int e^x \operatorname{sen} x\,dx = \frac{e^x(\operatorname{sen} x - \cos x)}{2} + C$

mar 14-14:36

Deberes

1) $\int (3x^2 + 2\sqrt{x} + e^{2x})\,dx$

2) $\int e^x \operatorname{sen}(e^x)\,dx$

3) $\int x e^{2x}\,dx$

4) $\int \frac{2x}{3+3x^2}\,dx$

5) $\int e^x \cdot \cos x\,dx$

6) $\int \frac{2}{3+3x^2}\,dx$

7) $\int \operatorname{arcsen} x\,dx$

8) $\int \frac{2x^3+x^2-x+4}{x^2}\,dx$

mar 14-14:56