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Trabajo sobre problemario

Grupo "A" Grado 6º

Integrales de funciones trigonométricas inversas

$$\begin{aligned}
 \text{Seno} \quad \int \sin^{-1}(ax) dx &= \frac{\sqrt{1-a^2x^2}}{a} + x \sin^{-1}(ax) + c \\
 \text{Coseno} \quad \int \cos^{-1}(ax) dx &= x \cos^{-1}(ax) - \frac{\sqrt{1-a^2x^2}}{a} + c \\
 \text{Tangente} \quad \int \tan^{-1}(ax) dx &= x \tan^{-1}(ax) - \frac{\ln|a^2x^2+1|}{2a} + c \\
 \text{Cotangente} \quad \int \cot^{-1}(ax) dx &= \frac{\ln|a^2x^2+1|}{2a} + x \cot^{-1}(ax) + c \\
 \text{Secante} \quad \int \sec^{-1}(ax) dx &= x \sec^{-1}(ax) - \frac{\ln|a(\sqrt{a^2x^2-1}+ax)|}{a} + c \\
 \text{Cosecante} \quad \int \csc^{-1}(ax) dx &= \frac{\ln|a(\sqrt{a^2x^2-1}+ax)|}{a} + x \csc^{-1}(ax) + c
 \end{aligned}$$

Integrales de funciones logarítmicas y exponenciales

$$\begin{array}{lll}
 1. \int u dv = uv - \int v du & 8. \int \sec^2 u du = \tan u + C & 15. \int \csc u du = \ln|\csc u - \cot u| + C \\
 2. \int u^n du = \frac{u^{n+1}}{n+1} + C \quad (n \neq -1) & 9. \int \csc^2 u du = -\cot u + C & 16. \int \frac{du}{\sqrt{a^2-u^2}} = \sin^{-1}\left(\frac{u}{a}\right) + C \\
 3. \int \frac{du}{u} = \ln|u| + C & 10. \int \sec u \tan u du = \sec u + C & 17. \int \frac{du}{a^2+u^2} = \frac{1}{a} \tan^{-1}\left(\frac{u}{a}\right) + C \\
 4. \int e^x du = e^x + C & 11. \int \csc u \cot u du = -\csc u + C & 18. \int \frac{du}{u\sqrt{u^2-a^2}} = \frac{1}{a} \sec^{-1}\left(\frac{u}{a}\right) + C \\
 5. \int a^x du = \frac{a^x}{\ln a} + C & 12. \int \tan u du = \ln|\sec u| + C & 19. \int \frac{du}{a^2-u^2} = \frac{1}{2a} \ln\left|\frac{u+a}{u-a}\right| + C \\
 6. \int \sin u du = -\cos u + C & 13. \int \cot u du = \ln|\sin u| + C & 20. \int \frac{du}{u^2-a^2} = \frac{1}{2a} \ln\left|\frac{u-a}{u+a}\right| + C \\
 7. \int \cos u du = \sin u + C & 14. \int \sec u du = \ln|\sec u + \tan u| + C &
 \end{array}$$

Integrales de funciones hiperbólicas

$$\int \frac{\sinh^m cx}{\cosh^n cx} dx = \frac{\sinh^{m-1} cx}{c(m-n)\cosh^{n-1} cx} + \frac{m-1}{m-n} \int \frac{\sinh^{m-2} cx}{\cosh^n cx} dx \quad (\text{para } m \neq n)$$

$$\int x \sinh cx dx = \frac{1}{c} x \cosh cx - \frac{1}{c^2} \sinh cx$$

$$\int x \cosh cx dx = \frac{1}{c} x \sinh cx - \frac{1}{c^2} \cosh cx$$

$$\int \tanh cx dx = \frac{1}{c} \ln|\cosh cx|$$

$$\int \coth cx dx = \frac{1}{c} \ln|\sinh cx|$$

$$\int \tanh^n cx dx = -\frac{1}{c(n-1)} \tanh^{n-1} cx + \int \tanh^{n-2} cx dx \quad (\text{para } n \neq 1)$$

$$\int \coth^n cx dx = -\frac{1}{c(n-1)} \coth^{n-1} cx + \int \coth^{n-2} cx dx \quad (\text{para } n \neq 1)$$

Integrales de funciones hiperbólicas inversas

$$66) \int \frac{\sin^n cx \, dx}{\cos cx} = -\frac{\sin^{n-1} cx}{c(n-1)} + \int \frac{\sin^{n-2} cx \, dx}{\cos cx} \quad (\text{for } n \neq 1)$$

$$67) \int \frac{\sin^n cx \, dx}{\cos cx} = -\frac{\sin^{n-1} cx}{c(n-1)} + \int \frac{\sin^{n-2} cx \, dx}{\cos cx} \quad (\text{for } n \neq 1)$$

$$68) \int \frac{\sin^n cx \, dx}{\cos^m cx} = \frac{\sin^{n+1} cx}{c(m-1)\cos^{m-1} cx} - \frac{n-m+2}{m-1} \int \frac{\sin^n cx \, dx}{\cos^{m-2} cx} \quad (\text{para } m \neq 1)$$

$$69) \int \frac{\cos cx \, dx}{\sin^n cx} = -\frac{1}{c(n-1)\sin^{n-1} cx} \quad (\text{para } n \neq 1)$$

$$70) \int \frac{\cos^2 cx \, dx}{\sin cx} = \frac{1}{c} \left(\cos cx + \ln \left| \tan \frac{cx}{2} \right| \right)$$

$$71) \int \frac{\cos^2 cx \, dx}{\sin^n cx} = -\frac{1}{n-1} \left(\frac{\cos cx}{c \sin^{n-1} cx} + \int \frac{dx}{\sin^{n-2} cx} \right) \quad (\text{para } n \neq 1)$$

$$72) \int \frac{\cos^n cx \, dx}{\sin^m cx} = -\frac{\cos^{n+1} cx}{c(m-1)\sin^{m-1} cx} - \frac{n-m-2}{m-1} \int \frac{\cos^n cx \, dx}{\sin^{m-2} cx} \quad (\text{para } m \neq 1)$$

$$73) \int \frac{\cos^n cx \, dx}{\sin^m cx} = \frac{\cos^{n-1} cx}{c(n-m)\sin^{m-1} cx} + \frac{n-1}{n-m} \int \frac{\cos^{n-2} cx \, dx}{\sin^m cx} \quad (\text{para } m \neq n)$$

$$74) \int \frac{\cos^n cx \, dx}{\sin^m cx} = -\frac{\cos^{n-1} cx}{c(m-1)\sin^{m-1} cx} - \frac{n-1}{m-1} \int \frac{\cos^{n-2} cx \, dx}{\sin^{m-2} cx} \quad (\text{para } m \neq 1)$$