1.1 Reglas de Derivación e Integración

INTEGRALES INMEDIATAS

1. $\int du = u + C$
2. $\int u^n du = \frac{u^{n+1}}{n+1} + C, n \neq -1$
3. $\int u^{-1} du = \int \frac{du}{u} = \ln|u| + C$
4. $\int a^u du = \frac{a^u}{\ln a} + C$
5. $\int e^u du = e^u + C$
6. $\int \sin u du = -\cos u + C$
7. $\int \cos u du = \sin u + C$
8. $\int \tan u du = \ln|\sec u| + C$
9. $\int \sec^2 u du = \tan u + C$
10. $\int \csc^2 u du = -\cot u + C$
11. $\int \sec u \tan u du = \sec u + C$
12. $\int \csc u \cot u du = -\csc u + C$
13. $\int \cot u du = \ln|\sin u| + C$
14. $\int \sec u du = \ln|\sec u + \tan u| + C$
15. $\int \csc u du = \ln|\csc u - \cot u| + C$
16. $\int \frac{du}{u^2 + a^2} = \frac{1}{a} \arctan \frac{u}{a} + C$
17. $\int \frac{du}{u^2 - a^2} = \frac{1}{2a} \ln\left|\frac{u-a}{u+a}\right| + C$
18. $\int \frac{du}{a^2 - u^2} = \frac{1}{2a} \ln\left|\frac{a+u}{a-u}\right| + C$

REGLAS DE DERIVACIÓN

1. $d(\ln u) = \frac{du}{u}$
2. $d(\log_a u) = \frac{du}{u \ln a}$
3. $d(e^u) = e^u du$
4. $d(a^u) = a^u \ln a du$
5. $d(\sin u) = \cos u du$
6. $d(\cos u) = -\sin u du$
7. $d(\tan u) = \sec^2 u du$
8. $d(\cot u) = -\csc^2 u du$
9. $d(\sec u) = \sec u \tan u du$
10. $d(\csc u) = -\csc u \cot u du$
11. $d(\arcsin u) = \frac{du}{\sqrt{1-u^2}}$
12. $d(\arccos u) = -\frac{du}{\sqrt{1-u^2}}$
13. $d(\arctan u) = \frac{du}{1+u^2}$
14. $d(\operatorname{arccot} u) = -\frac{du}{1+u^2}$
15. $d(\operatorname{arcsec} u) = \frac{du}{u\sqrt{u^2-1}}$
16. $d(\operatorname{arccsc} u) = -\frac{du}{u\sqrt{u^2-1}}$

LEYES DE LOS EXPONENTES

$a^m \cdot a^n = a^{m+n}$		$(ab)^n = a^n \cdot b^n$
$\frac{a^m}{a^n} = a^{m-n}$	$(a^m)^n = a^{mn}$	$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$
$a^{-n} = \frac{1}{a^n}$		$\sqrt[n]{a^m} = a^{m/n}$

TRIGONOMETRÍA

$\sin\theta = \frac{C.O.}{H}$	$\cos\theta = \frac{C.A.}{H}$	$\tan\theta = \frac{C.O.}{C.A.}$
$\csc\theta = \frac{H}{C.O.}$	$\sec\theta = \frac{H}{C.A.}$	$\cot\theta = \frac{C.A.}{C.O.}$

$\int udv = uv - \int vdu$

("Un día ví una vaca sin cola vestida de uniforme")

IDENTIDADES TRIGONOMÉTRICAS

$\cos^2 x = 1 - \sin^2 x$	$\sin^2 x = 1 - \cos^2 x$
$\sin^2 x = \frac{1}{2} - \frac{1}{2}\cos 2x$	$\cos^2 x = \frac{1}{2} + \frac{1}{2}\cos 2x$
$\sin^2 x + \cos^2 x = 1$	$\sin x \cos x = \frac{1}{2}\sin 2x$
$\sin 2x = 2\sin x \cos x$	$\cos 2x = 2\cos^2 x - 1$
$\sec^2 \theta = 1 + \tan^2 \theta$	$\tan^2 \theta = \sec^2 \theta - 1$
$\cot^2 \theta = \csc^2 \theta - 1$	$\csc^2 \theta = \cot^2 \theta + 1$

$\csc\theta = \frac{1}{\sin\theta}$	$\sec\theta = \frac{1}{\cos\theta}$	$\cot\theta = \frac{1}{\tan\theta}$	$\tan\theta = \frac{\sin\theta}{\cos\theta}$