Ley de los logaritmos

$$log_a AB = log_a A + log_a B$$
$$log_a \frac{A}{B} = log_a A - log_a B$$
$$log_a B^n = n log_a B$$

Substituciones trigonométricas

$$\sqrt{a^2 - x^2}, \quad x = asen\theta$$
$$\sqrt{a^2 + x^2}, \quad x = atan\theta$$
$$\sqrt{x^2 - a^2}, \quad x = asec\theta$$

Derivadas

$$((f \pm g))(x))' = f'(x) \pm g'(x)$$

((f*g)(x))´=f´(x)g(x)+g´(x)f(x)

$$\left[\left(\frac{f}{g}\right)(x)\right]' = \frac{f'(x)g(x) - g`(x)f(x))}{(g(x))^2}$$

$$[(fog)(x)]' = [(f\acute{o}g)(x)](g'(x))$$

$$[x^n]' = nx^{n-1}$$

$$[ln(x)]' = \frac{1}{x}$$

$$[e^x]' = e^x$$

$$[senx]' = cosx$$
$$[cosx]' = -senx$$
$$[tanx]' = sec^2 x$$
$$[cotx]' = -csc^2 x$$
$$[secx]' = secx\ tanx$$
$$[cscx]' = -cscx\ ctgx$$

$$[arcsenx]' = \frac{1}{\sqrt{1 - x^2}}$$

$$[arccosx]' = \frac{-1}{\sqrt{1 - x^2}}$$

$$[arccotx]' = \frac{-1}{1 + x^2}$$

$$[arcsecx]' = \frac{1}{|x|\sqrt{x^2 - 1}}$$

$$[arccscx]' = \frac{-1}{|x|\sqrt{x^2 - 1}}$$

Integration por parte

$$\int f'(x)g(x)dx = (fg)(x) - \int g'(x)f(x)dx$$

Integrales

$$\int kdx = kx + c\,, k \in R$$
$$\int (f \pm g)(dx) = \int f(x)dx \pm \int g(x)dx$$
$$\int kf(x)dx = k \int f(x)dx\,, \quad k \in R$$
$$\int x^n\,dx = \frac{x^{n+1}}{n + 1} + c\,, \qquad n \neq -1$$
$$\int \frac{dx}{x} = lnx + c$$
$$\int e^x dx = e^x + c$$
$$\int a^x dx = \frac{a^x}{lna} + c$$
$$\int senxdx = -cosx + c$$
$$\int cosxdx = senx + c$$
$$\int tanxdx = ln|secx| + c$$
$$\int cotxdx = ln|sex| + c$$
$$\int secxdx = ln|secx + tanx| + c$$
$$\int cscxdx = ln|cscx - cotx| + c$$
$$\int sec^2 xdx = tanx + c$$
$$\int csc^2 xdx = -cotx + c$$
$$\int secxtanxdx = secx + c$$
$$\int cscxcotxdx = -cscx + c$$
$$\int \frac{dx}{\sqrt{a^2 - x^2}} = arcsen\frac{x}{a} + c$$
$$\int \frac{dx}{a^2 + x^2} = \frac{1}{a} arctan\frac{x}{a} + c$$
$$\int \frac{-dx}{x\sqrt{x^2 + a^2}} = \frac{1}{a} arcsec\frac{x}{a} + c$$

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Álgebra

Leyes de los exponentes y radicales

1. $x^n * x^m = x^{n+m}$
2. $\frac{x^n}{x^m} = x^{n-m}$
3. $(x^n)^m = x^{n*m}$
4. $x^{\frac{m}{n}} = \sqrt[m]{x^n} = (\sqrt[m]{x})^n$
5. $x^{-n} = \frac{1}{x^n}\ con\ x \neq 0$
6. $(\frac{x}{y})^n = \frac{x^n}{y^n}\ ; con\ y \neq 0$
7. $\sqrt[n]{xy} = \sqrt[n]{x}\sqrt[n]{y}\ ; con\ x > 0\ ;\ y > 0$
8. $\sqrt[n]{\frac{x}{y}} = \frac{\sqrt[n]{x}}{\sqrt[n]{y}}\ ; x > 0\ y\ > 0$

$factorizacion$

1. $ab + ac = a(b + c)$
2. $ax + ay + bx + by = (a + b)(x + y)$
3. $x^2 - y^2 = (x - y)(x + y)$
4. $x^3 + y^3 = (x + y)(x^2 - xy + y^2)$
5. $x^3 - y^3 = (x - y)(x^2 + xy + y^2)$
6. $x^2 + 2xy + x^2 = (x + y)^2$
7. $x^3 + 3x^2y + 3xy^2 + y^3 = (x + y)^3$

$Solucion\ de\ la\ ecuacion\ cuadratica$

$$ax^2 + bx + c = 0$$

Solución

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Geometría de Euclides

1. Circulo $P = 2\pi r \qquad A = \pi r^2$
2. Cono $A = \pi r^2 + \pi r\sqrt{r^2 + h^2}$
   $V \frac{1}{3}\pi r^2 h$
3. Esfera $A = 4\pi r^2 \quad V = \frac{4}{3}\pi r^3$
4. Cilindro $A = 2\pi r^2 + 2\pi x^2 h$
   $V = \pi r^2 h$

TRIGONO METERÍA

1. $cotA = \frac{1}{tanA}$
2. $secA = \frac{1}{cosA}$
3. $cscA = \frac{1}{senA}$
4. $tanA = \frac{senA}{cosA}$
5. $cotA = \frac{cosA}{senA}$
6. $sen^2A + cos^2A = 1$
7. $1 + tan^2A = sec^2A$
8. $1 + cot^2A = csc^2A$

$$sen(A \pm B) = senAcosB \pm senBcosA$$

$$\cos(A \pm B) = cosAcosB \mp senAsenB$$

$$tanA = \frac{tanA \pm tanB}{1 \mp tanAtanB}$$

$$sen2A = 2senAcosA$$

$$cos2A = cos^2A - sen^2A$$

$$sen^2A = \frac{1 + cos2A}{2}$$

$$cos^2A = \frac{1 - cos2A}{2}$$

GEOMETRÍA ANALÍTICA

1.Recta $y = mx + b$

2.parabola H $(y - k)^2 = 4p(x - h)$

3.parabola V $(x - h)^2 = 4p(y - k)$

4. circunferencia $(x - h)^2 + (y - k)^2 = r^2$

5.Helipse H $\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1$

6.Helipse V $\frac{(x-h)^2}{b^2} + \frac{(y-k)^2}{a^2} = 1$

Hipérbola H $\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1$

Hipérbola V $\frac{(y-k)^2}{a^2} + \frac{(x-h)^2}{b^2} = 1$

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