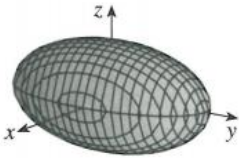
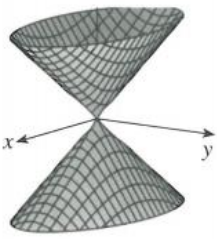

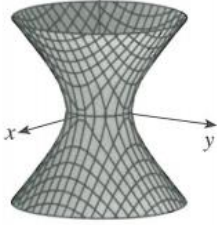
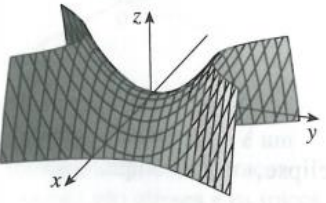
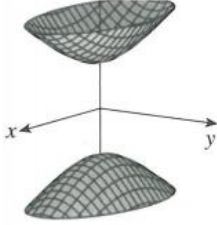
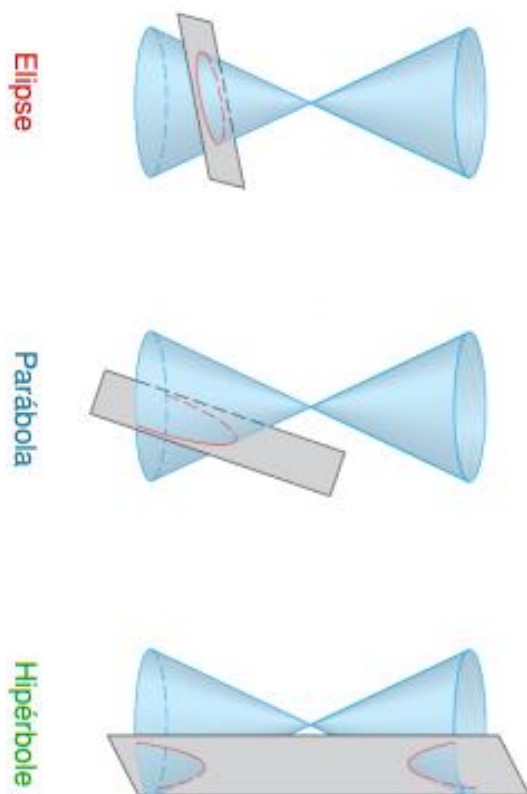


$(f \pm g)'(x) = f'(x) \pm g'(x)$	$(f g)'(x) = f'(x) g(x) + f(x) g'(x)$	$\int a \, dx = ax + C$	$\int u' u^\alpha \, dx = \frac{u^{\alpha+1}}{\alpha+1} + C \quad (\alpha \neq -1)$
$\left(\frac{f}{g}\right)'(x) = \frac{f'(x)g(x) - f(x)g'(x)}{g^2(x)}$	$(x^a)' = a x^{a-1}$	$\int \frac{u'}{u} \, dx = \ln u + C$	$\int u' a^u \, dx = \frac{a^u}{\ln a} + C \quad (a \in \mathbb{R}^+ \setminus \{1\})$
$(a^x)' = a^x \ln a$	$(\log_a x)' = \frac{1}{x \ln a}$	$\int u' \cos u \, dx = \sin u + C$	$\int u' \sin u \, dx = -\cos u + C$
$(e^x)' = e^x$	$(\ln x)' = \frac{1}{x}$	$\int u' \operatorname{tg} u \, dx = -\ln \cos u + C$	$\int u' \cotg u \, dx = \ln \sin u + C$
$\operatorname{sen}' x = \cos x$	$\cotg' x = -\frac{1}{\operatorname{sen}^2 x}$	$\int \frac{u'}{\cos^2 u} \, dx = \operatorname{tg} u + C$	$\int \frac{u'}{\operatorname{sen}^2 u} \, dx = -\cotg u + C$
$\operatorname{tg}' x = \frac{1}{\cos^2 x}$	$\operatorname{cosec}' x = -\operatorname{cosec} x \cotg x$	$\int \frac{u'}{\sqrt{1-u^2}} \, dx = \arcsen u + C$	$\int \frac{-u'}{\sqrt{1-u^2}} \, dx = \arccos u + C$
$\operatorname{sec}' x = \sec x \operatorname{tg} x$	$\operatorname{ch}' x = \operatorname{sh} x$	$\int \frac{u'}{1+u^2} \, dx = \operatorname{arctg} u + C$	$\int \frac{-u'}{1+u^2} \, dx = \operatorname{arccotg} u + C$
$\operatorname{sh}' x = \operatorname{ch} x$	$\coth' x = -\frac{1}{\operatorname{sh}^2 x}$	$\int u' \operatorname{ch} u \, dx = \operatorname{sh} u + C$	$\int u' \operatorname{sh} u \, dx = \operatorname{ch} u + C$
$\operatorname{th}' x = \frac{1}{\operatorname{ch}^2 x}$	$\operatorname{cosech}' x = -\operatorname{cosech} x \coth x$	$\int u' \operatorname{th} u \, dx = \ln(\operatorname{ch} u) + C$	$\int u' \coth u \, dx = \ln \operatorname{sh} u + C$
$\operatorname{sech}' x = -\operatorname{sech} x \operatorname{th} x$	$\arcsen' x = \frac{1}{\sqrt{1-x^2}}$	$\int u' \operatorname{ch} u \, dx = \operatorname{sh} u + C$	$\int u' \coth u \, dx = \ln \operatorname{sh} u + C$
$\operatorname{arctg}' x = \frac{1}{1+x^2}$	$\arccos' x = \frac{-1}{\sqrt{1-x^2}}$	$\int \frac{u'}{\operatorname{ch}^2 u} \, dx = \operatorname{th} u + C$	$\int \frac{u'}{\operatorname{sh}^2 u} \, dx = -\coth u + C$
$\operatorname{arcsec}' x = \frac{1}{x\sqrt{x^2-1}}$	$\operatorname{arccotg}' x = \frac{-1}{1+x^2}$	$\int \frac{u'}{\sqrt{u^2+1}} \, dx = \operatorname{argsh} u + C$	$\int \frac{u'}{\sqrt{u^2-1}} \, dx = \operatorname{argch} u + C$
$\operatorname{argsh}' x = \frac{1}{\sqrt{1+x^2}}$	$\operatorname{arccosec}' x = \frac{-1}{x\sqrt{x^2-1}}$	$\int \frac{u'}{1-u^2} \, dx = \operatorname{argth} u + C$	$\int \frac{u'}{1-u^2} \, dx = \operatorname{argcoth} u + C$
$\operatorname{argth}' x = \frac{1}{1-x^2}$	$\operatorname{argch}' x = \frac{1}{\sqrt{x^2-1}}$		
$\operatorname{argsech}' x = \frac{-1}{x\sqrt{1-x^2}}$	$\operatorname{argcoth}' x = \frac{1}{1-x^2}$		
$(f \circ u)'(x) = f'(u(x)) u'(x)$	$(f^{-1})'(y) = \frac{1}{f'(f^{-1}(y))}$		

Superfície	Equação	Superfície	Equação
Elipsóide 	$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$ <p>Todos os traços são elipses. Se $a = b = c$, o elipsóide é uma esfera.</p>	Cone 	$\frac{z^2}{c^2} = \frac{x^2}{a^2} + \frac{y^2}{b^2}$ <p>Traços horizontais são elipses. Traços verticais nos planos $x = k$ e $y = k$ são hipérboles se $k \neq 0$, mas são um par de retas quando $k = 0$.</p>
Parabolóide Elíptico 	$\frac{z}{c} = \frac{x^2}{a^2} + \frac{y^2}{b^2}$ <p>Traços horizontais são elipses. Traços verticais são parábolas. A variável elevada à primeira potência indica o eixo do parabolóide.</p>	Hiperbolóide de Uma Folha 	$\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2} = 1$ <p>Traços horizontais são elipses. Traços verticais são hipérboles. O eixo de simetria corresponde à variável cujo coeficiente é negativo.</p>
Parabolóide Hiperbólico 	$\frac{z}{c} = \frac{x^2}{a^2} - \frac{y^2}{b^2}$ <p>Traços horizontais são hipérboles. Traços verticais são parábolas. O caso aqui ilustrado corresponde a $c < 0$</p>	Hiperbolóide de Duas Folhas 	$-\frac{x^2}{a^2} - \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$ <p>Traços horizontais em $z = k$ são elipses se $k > c$ ou se $k < -c$. Traços verticais são hipérboles. Os dois sinais de menos indicam duas folhas.</p>

Cônicas são curvas planas obtidas por interseção de um cone circular reto com um plano

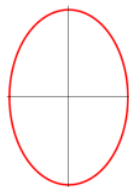


Elipse

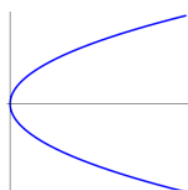
Parábola

Hipérbole

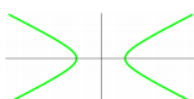
$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1, a > b$$



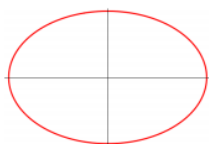
$$y = kx^2, k > 0$$



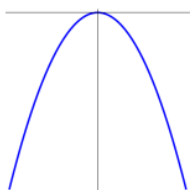
$$\frac{y^2}{a^2} - \frac{x^2}{b^2} = 1$$



$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1, a < b$$



$$x = ky^2, k > 0$$



$$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$$

