Formulário de Regras de Derivação

$u = f(x);\ v = g(x);\ k = Const;\ a = Const;\ \alpha = Const$

1. $k' = 0$	16. $(\cos(u))' = -\sin(u).u'$
2. $x' = 1$	17. $(\tan(u))' = \sec^2(u).u'$
3. $(u \pm v)' = u' \pm v'$	18. $(\cot(u))' = -\csc^2(u).u'$
4. $(uv)' = u'v + uv'$	19. $(\sec(u))' = \sec(u)\tan(u).u'$
5. $\left(\frac{u}{v}\right)' = \frac{u'v - uv'}{v^2}$	20. $(\csc(u))' = -\csc(u)\cot(u).u'$
6. $(ku)' = ku'$	21. $(\arcsin(u))' = \frac{u'}{\sqrt{1-u^2}}$
7. $(u^\alpha)' = \alpha u^{\alpha-1}u'$	22. $(\arccos(u))' = -\frac{u'}{\sqrt{1-u^2}}$
8. $(\sqrt{u})' = \frac{u'}{2\sqrt{u}}$	23. $(\arctan(u))' = \frac{u'}{1+u^2}$
9. $(\sqrt[n]{u})' = \frac{u'}{n\sqrt[n]{u^{n-1}}}$	24. $(arc\cot(u)))' = -\frac{u'}{1+u^2}$
10. $(e^u)' = e^u.u'$	25. $(arc\sec(u)))' = \frac{u'}{u\sqrt{u^2-1}}$
11. $(a^u)' = e^u.u'\ln(a)$	26. $(arc\csc(u)))' = -\frac{u'}{u\sqrt{u^2-1}}$
12. $(u^v) = u^v v' ln(u) + vu^{v-1}u'$	27. $(\sinh(u))' = \cosh(u).u'$
13. $(\ln(u))' = \frac{u'}{u}$	28. $(\cosh(u))' = \sinh(u).u'$
14. $(log_a(u))' = \frac{u'}{ulog(a)}$	29. $(\tanh(u))' = \frac{u'}{\cosh^2 u}$
15. $(\sin(u))' = \cos(u).u'$	30. $(u \circ v)' = u'(v).v'$

Formulário de Trigonometria

1. $\tan x = \frac{\sin x}{\cos x}$
2. $\cot x = \frac{\cos x}{\sin x}$
3. $\sec x = \frac{1}{cosx}$
4. $\csc x = \frac{1}{\sin x}$
5. $\sin^2 x + \cos^2 x = 1$
6. $1 + \tan^2 x = \sec^2 x$
7. $1 + \cot^2 x = \csc^2 x$
8. $\sin(x \pm y) = \sin x \cos y \pm \sin y \cos x$
9. $\cos(x \pm y) = \cos x \cos y \mp \sin x \sin y$
10. $\tan(x \pm y) = \frac{\tan x \pm \tan y}{1 \mp \tan x \tan y}$
11. $\sin(2x) = 2 \sin x \cos x$
12. $\cos(2x) = \cos^2 x - \sin^2 x$
13. $\tan(2x) = \frac{2 \tan x}{1 - \tan^2 x}$
14. $\sin(\frac{x}{2}) = \pm\sqrt{\frac{1-\cos x}{2}}$
15. $\cos(\frac{x}{2}) = \pm\sqrt{\frac{1+\cos x}{2}}$
16. $tan(\frac{x}{2}) = \pm\sqrt{\frac{1-\cos x}{1+\cos x}}$
17. $\sin x = \frac{2 \tan(x/2)}{1+\tan^2(x/2)}$
18. $\cos x = \frac{1-\tan^2(x/2))}{1+\tan^2(x/2)}$
19. $\sin x \pm \sin y = 2 \sin \frac{x \pm y}{2} \cos \frac{x \mp y}{2}$
20. $\cos x + \cos y = 2 \cos \frac{x+y}{2} \cos \frac{x-y}{2}$
21. $\cos x - \cos y = -2 \sin \frac{x+y}{2} \sin \frac{x-y}{2}$

Argumento	0	$\pi/6$	$\pi/4$	$\pi/3$	$\pi/2$	π	$3\pi/2$
seno	0	$1/2$	$\sqrt{2}/2$	$\sqrt{3}/2$	1	0	-1
coseno	1	$\sqrt{3}/2$	$\sqrt{2}/2$	$1/2$	0	-1	0
tangente	0	$\sqrt{3}/3$	1	$\sqrt{3}$	$-$	0	$-$
cotangente	$-$	$\sqrt{3}$	1	$\sqrt{3}/3$	0	$-$	0

Formulário de Primitivas

$u = f(x)$; $k = Const$; $a = Const$; $\alpha = Const$

Primitivas Imediatas	**Primitivas Imediatas**
1. $P(k) = kx$	13. $P\left(\frac{u'}{\sqrt{1-u^2}}\right) = \arcsin(u) = -\arccos(u)$
2. $P(ku) = kP(u)$	14. $P\left(\frac{u'}{\sqrt{a^2-u^2}}\right) = \arcsin\left(\frac{u}{a}\right) = -\arccos\left(\frac{u}{a}\right)$
3. $P(u^\alpha.u') = \frac{u^{\alpha+1}}{\alpha+1}$	15. $P\left(\frac{u'}{1+u^2}\right) = \arctan(u) = -arc\cot(u)$
4. $P\left(\frac{u'}{u}\right) = \ln\lvert u\rvert$	16. $P\left(\frac{u'}{a^2+u^2}\right) = \frac{1}{a}\arctan\left(\frac{u}{a}\right) = -arc\cot\left(\frac{u}{a}\right)$
5. $P(e^u.u') = e^u$	17. $P\left(\frac{u'}{u\sqrt{u^2-1}}\right) = arc\sec(u) = -arc\csc(u)$
6. $P(a^u.u') = \frac{a^u}{\ln\lvert a\rvert}$	18. $P(\cosh(u).u') = \sinh(u)$
7. $P(\sin(u).u') = -\cos(u)$	19. $P(\sinh(u).u') = \cosh(u)$
8. $P(\cos(u).u') = \sin(u)$	**Primitivas Quase-Imediatas**
9. $P(\sec^2(u).u') = \tan(u)$	20. $P(\tan(u)) = -\ln\lvert\cos(u)\rvert$
10. $P(\csc^2(u).u') = -\cot(u)$	21. $P(\cot(u)) = \ln\lvert\sin(u)\rvert$
11. $P(\sec(u)\tan(u).u') = \sec(u)$	22. $P(\sec(u)u') = \ln\lvert\sec(u)+\tan(u)\rvert$
12. $P(\csc(u)\cot(u).u') = -\csc(u)$	

Técnica de integração por partes

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