

Acadêmico(a): _____

ALGUMAS REGRAS DE DERIVAÇÃO

(Neste quadro, **u** e **v** são funções deriváveis de **x**. Por outro lado, **k**, **a**, **m** e **n** são constantes.)

FUNÇÃO	DERIVADA
1. $y = u \cdot v$	$y' = u' \cdot v + u \cdot v'$
2. $y = \frac{u}{v}$ ($v \neq 0$)	$y' = \frac{u' \cdot v - u \cdot v'}{v^2}$
3. $y = a^x$ com ($a > 0$ e $a \neq 1$)	$y' = a^x \cdot \ln a$
4. $y = e^x$	$y' = e^x$
5. $y = \log_a x$ com ($a > 0$ e $a \neq 1$, $x > 0$)	$y' = \frac{1}{x \cdot \ln a}$
6. $y = \ln x$ com ($x > 0$)	$y' = \frac{1}{x}$
7. $y = u^v$ com ($u > 0$)	$y' = v \cdot u^{v-1} \cdot u' + u^v \cdot \ln u \cdot v'$
8. $y = \operatorname{sen} x$	$y' = \cos x$
9. $y = \cos x$	$y' = -\operatorname{sen} x$
10. $y = \operatorname{tg} x$	$y' = \sec^2 x$
11. $y = \cot g x$	$y' = -\cos \sec^2 x$
12. $y = \sec x$	$y' = \sec x \cdot \operatorname{tg} x$
13. $y = \operatorname{cosec} x$	$y' = -\cos \sec x \cdot \cot g x$
14. $y = \operatorname{arc} \operatorname{sen} x$	$y' = \frac{1}{\sqrt{1-x^2}}$
15. $y = \operatorname{arc} \cos x$	$y' = -\frac{1}{\sqrt{1-x^2}}$
16. $y = \operatorname{arc} \operatorname{tg} x$	$y' = \frac{1}{1+x^2}$

- Regra da Cadeia: $\frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx}$

ALGUMAS FÓRMULAS E PROPRIEDADES DE INTEGRAIS

$$1) \int x^{-1} dx = \int \frac{1}{x} dx = \ln |x| + k \text{ (para } x \neq 0 \text{)}$$

$$2) \int e^x dx = e^x + k$$

$$3) \int a^x dx = \frac{a^x}{\ln a} + k$$

$$4) \int \operatorname{sen} x \cdot du = -\cos x + k$$

$$5) \int \cos x dx = \operatorname{sen} x + k$$

$$6) \int \cotg x \cdot dx = \ln |\operatorname{sen} x| + k$$

$$7) \int \sec^2 x \cdot dx = \tg x + k$$

$$8) \int \operatorname{cosec}^2 x \cdot dx = -\cotg x + k$$

$$9) \int \sec x \cdot \tg x dx = \sec x + k$$

$$10) \int \operatorname{cosec} x \cdot \cotg x \cdot dx = -\operatorname{cosec} x + k$$

$$11) \int \frac{1}{1+x^2} dx = \operatorname{arc} \tg x + k$$

$$12) \int \frac{1}{a^2+x^2} dx = \frac{1}{a} \operatorname{arc} \tg \frac{x}{a} + k$$

$$13) \int \sec x dx = \ln |\sec x + \tg x| + k$$

Integrais por partes: $\int u \cdot dv = u \cdot v - \int v \cdot du$

TRIGONOMETRIA

$$\operatorname{sen}^2 \theta + \cos^2 \theta = 1$$

$$1 + \tg^2 \theta = \sec^2 \theta$$

$$1 + \cotg^2 \theta = \operatorname{cosec}^2 \theta$$

Arcos duplos: $\cos 2\theta = \cos^2 \theta - \operatorname{sen}^2 \theta$ $\operatorname{sen} 2\theta = 2 \cdot \operatorname{sen} \theta \cdot \cos \theta$

Conseqüência da relação fundamental trigonométrica e arcos duplos:

$$\cos^2 \theta = \frac{1}{2}(1 + \cos 2\theta) \quad \operatorname{sen}^2 \theta = \frac{1}{2}(1 - \cos 2\theta)$$

$$\operatorname{sen} A \cdot \cos B = \frac{1}{2} [\operatorname{sen}(A - B) + \operatorname{sen}(A + B)] \quad \cos A \cdot \cos B = \frac{1}{2} [\cos(A - B) + \cos(A + B)]$$

$$\operatorname{sen} A \cdot \operatorname{sen} B = \frac{1}{2} [\cos(A - B) - \cos(A + B)]$$