

Potenzregel

Donnerstag, 31. Jänner 2008
19:30

wxMaxima session

1 / 1

(%i1) $f(x) := x^{**2};$

(%o1) $f(x) := x^2$

(%i2) $ab:diff(f(x),x);$

(%o2) $2 x$

(%i3) $f(x) := x^{**3};$

(%o3) $f(x) := x^3$

(%i4) $ab:diff(f(x),x);$

(%o4) $3 x^2$

(%i5) $f(x) := x^{**4};$

(%o5) $f(x) := x^4$

(%i6) $ab:diff(f(x),x);$

(%o6) $4 x^3$

(%i7) $f(x) := x^{**n};$

(%o7) $f(x) := x^n$

(%i8) $ab:diff(f(x),x);$

(%o8) $n x^{n-1}$

(%i9)

Kettenregel

Donnerstag, 31. Jänner 2008
19:40

wxMaxima session

1 / 2

(%i1) $f(x) := u(x)**n;$

(%o1) $f(x) := u(x)^n$

(%i2) $ab:diff(f(x),x);$

(%o2) $n u(x)^{n-1} \left(\frac{d}{dx} u(x) \right)$

(%i9) $f(x) := sqrt(u(x));$

(%o9) $f(x) := \sqrt{u(x)}$

(%i10) $ab:diff(f(x),x);$

(%o10) $\frac{\frac{d}{dx} u(x)}{2\sqrt{u(x)}}$

(%i3) $f(x) := log(u(x));$

(%o3) $f(x) := \log(u(x))$

(%i4) $ab:diff(f(x),x);$

(%o4) $\frac{\frac{d}{dx} u(x)}{u(x)}$

(%i11) $f(x) := exp(u(x));$

(%o11) $f(x) := \exp(u(x))$

(%i12) $ab:diff(f(x),x);$

(%o12) $\%e^{u(x)} \left(\frac{d}{dx} u(x) \right)$

(%i5) $f(x) := sin(u(x));$

(%o5) $f(x) := \sin(u(x))$

(%i6) $ab:diff(f(x),x);$

(%o6) $\cos(u(x)) \left(\frac{d}{dx} u(x) \right)$

(%i7) $f(x) := cos(u(x));$

(%o7) $f(x) := \cos(u(x))$

(%i8) `ab:diff(f(x),x);`

(%o8) $-\sin(u(x)) \left(\frac{d}{dx} u(x) \right)$

(%i13)

Summenregel

Donnerstag, 31. Jänner 2008

19:44

wxMaxima session

1 / 1

(%i1) $f(x) := u(x) + v(x);$

(%o1) $f(x) := u(x) + v(x)$

(%i2) $ab: \text{diff}(f(x), x);$

(%o2) $\frac{d}{dx} v(x) + \frac{d}{dx} u(x)$

(%i3) $f(x) := a*x**2 + b*x + c;$

(%o3) $f(x) := a x^2 + b x + c$

(%i4) $ab: \text{diff}(f(x), x);$

(%o4) $2 a x + b$

(%i5) $f(x) := \exp(x) + \log(x);$

(%o5) $f(x) := \exp(x) + \log(x)$

(%i6) $ab: \text{diff}(f(x), x);$

(%o6) $\%e^x + \frac{1}{x}$

(%i7) $f(x) := \sin(x) + \cos(x);$

(%o7) $f(x) := \sin(x) + \cos(x)$

(%i8) $ab: \text{diff}(f(x), x);$

(%o8) $\cos(x) - \sin(x)$

(%i9)

Produktregel

Donnerstag, 31. Jänner 2008
19:49

wxMaxima session

1 / 1

(%i1) $f(x) := u(x) \cdot v(x);$

(%o1) $f(x) := u(x) v(x)$

(%i2) $ab:diff(f(x),x);$

(%o2) $u(x) \left(\frac{d}{dx} v(x) \right) + v(x) \left(\frac{d}{dx} u(x) \right)$

(%i3) $f(x) := x^n \cdot \exp(x);$

(%o3) $f(x) := x^n \exp(x)$

(%i4) $ab:diff(f(x),x);$

(%o4) $x^n \%e^x + n x^{n-1} \%e^x$

(%i5) $f(x) := \sin(x) \cdot \log(x);$

(%o5) $f(x) := \sin(x) \log(x)$

(%i6) $ab:diff(f(x),x);$

(%o6) $\frac{\sin(x)}{x} + \cos(x) \log(x)$

(%i7) $f(x) := \sin(x) \cdot \cos(x);$

(%o7) $f(x) := \sin(x) \cos(x)$

(%i8) $ab:diff(f(x),x);$

(%o8) $\cos(x)^2 - \sin(x)^2$

(%i9)

Quotientenregel

Donnerstag, 31. Jänner 2008
19:52

wxMaxima session

1 / 2

(%i1) f(x):=u(x)/v(x);

(%o1) $f(x) := \frac{u(x)}{v(x)}$

(%i2) ab:diff(f(x),x);

(%o2) $\frac{\frac{d}{dx}u(x)}{v(x)} - \frac{u(x)\left(\frac{d}{dx}v(x)\right)}{v(x)^2}$

(%i3) factor(%);

(%o3) $-\frac{u(x)\left(\frac{d}{dx}v(x)\right) - v(x)\left(\frac{d}{dx}u(x)\right)}{v(x)^2}$

(%i4) f(x):=(a*x+b)/(c*x+d);

(%o4) $f(x) := \frac{ax + b}{cx + d}$

(%i5) ab:diff(f(x),x);

(%o5) $\frac{a}{cx + d} - \frac{c(ax + b)}{(cx + d)^2}$

(%i6) factor(%);

(%o6) $\frac{ad - bc}{(cx + d)^2}$

(%i7) f(x):=sin(x)/log(x);

(%o7) $f(x) := \frac{\sin(x)}{\log(x)}$

(%i8) ab:diff(f(x),x);

(%o8) $\frac{\cos(x)}{\log(x)} - \frac{\sin(x)}{x \log(x)^2}$

(%i9) factor(%);

(%o9) $-\frac{\sin(x) - x \cos(x) \log(x)}{x \log(x)^2}$

(%i10) f(x):=exp(x)/cos(x);

(%o10) $f(x) := \frac{\exp(x)}{\cos(x)}$

(%i11) `ab:diff(f(x),x);`

(%o11) $\frac{e^x \sin(x)}{\cos(x)^2} + \frac{e^x}{\cos(x)}$

(%i12) `factor(%);`

(%o12) $\frac{e^x (\sin(x) + \cos(x))}{\cos(x)^2}$

(%i13)