d/dx(e−x)=?

ChatGPT

**ChatGPT**

To differentiate 𝑒−𝑥*e*−*x* with respect to 𝑥*x*, you can use the chain rule:

𝑑𝑑(𝑒−𝑥)=−𝑒−𝑥*dxd*​(*e*−*x*)=−*e*−*x*

So, 𝑑𝑑(𝑒−𝑥)=−𝑒−𝑥*dxd*​(*e*−*x*)=−*e*−*x*.

**You**

The inequality L-e < f(x) < L+ e can be written as | f(x)- L | > e | f(x)- L | < e | f(x)- e | < L |f(x)- e | > L

ChatGPT

**ChatGPT**

The inequality 𝐿−𝑒<(𝑥)<𝐿+𝑒*L*−*e*<*f*(*x*)<*L*+*e* can be rewritten in terms of the absolute value as:

∣(𝑥)−𝐿∣<𝑒∣*f*(*x*)−*L*∣<*e*

So, the correct option is ∣(𝑥)−𝐿∣<𝑒∣*f*(*x*)−*L*∣<*e*.

**You**

The derivative of 2y2=x2−1, is −x/2y2 −x/2y x/2y x/2y

ChatGPT

**ChatGPT**

To find the derivative of 2𝑦2=𝑥2−12*y*2=*x*2−1 with respect to 𝑥*x*, you can differentiate both sides of the equation with respect to 𝑥*x*.

Given: 2𝑦2=𝑥2−12*y*2=*x*2−1

Taking the derivative with respect to 𝑥*x*:

𝑑𝑑(2𝑦2)=𝑑𝑑𝑥(𝑥2−1)*dxd*​(2*y*2)=*dxd*​(*x*2−1)

Using the power rule for differentiation:

4𝑦𝑑𝑦𝑑𝑥=2𝑥4*ydxdy*​=2*x*

Solving for 𝑑𝑦𝑑𝑥*dxdy*​:

𝑑𝑦𝑑𝑥=2𝑥4𝑦=𝑥2𝑦*dxdy*​=4*y*2*x*​=2*yx*​

So, the derivative of 2𝑦2=𝑥2−12*y*2=*x*2−1 with respect to 𝑥*x* is 𝑥2𝑦2*yx*​.

**You**

If f(x) = x sin(x), then which of the following is the derivative of f(x) xcos(x) + sin(x). None of these. xsin(x) + cos(x). -xcos(x) + sin(x).

ChatGPT

**ChatGPT**

To find the derivative of 𝑓(𝑥)=𝑥sin⁡(𝑥)*f*(*x*)=*x*sin(*x*), you can use the product rule of differentiation, which states that if 𝑓(𝑥)=𝑢(𝑥)𝑣(𝑥)*f*(*x*)=*u*(*x*)*v*(*x*), then 𝑓′(𝑥)=𝑢′(𝑥)𝑣(𝑥)+𝑢(𝑥)𝑣′(𝑥)*f*′(*x*)=*u*′(*x*)*v*(*x*)+*u*(*x*)*v*′(*x*).

Let (𝑥)=𝑥*u*(*x*)=*x* and 𝑣(𝑥)=sin⁡(𝑥)*v*(*x*)=sin(*x*).

Now, compute the derivatives:

𝑢′(𝑥)=1*u*′(*x*)=1 (derivative of 𝑥*x* with respect to 𝑥*x*) 𝑣′(𝑥)=cos⁡(𝑥)*v*′(*x*)=cos(*x*) (derivative of sin⁡(𝑥)sin(*x*) with respect to 𝑥*x*)

Now, apply the product rule:

𝑓′(𝑥)=𝑢′(𝑥)𝑣(𝑥)+𝑢(𝑥)𝑣′(𝑥)*f*′(*x*)=*u*′(*x*)*v*(*x*)+*u*(*x*)*v*′(*x*) 𝑓′(𝑥)=(1)(sin⁡(𝑥))+(𝑥)(cos⁡(𝑥))*f*′(*x*)=(1)(sin(*x*))+(*x*)(cos(*x*)) 𝑓′(𝑥)=sin⁡(𝑥)+𝑥cos⁡(𝑥)*f*′(*x*)=sin(*x*)+*x*cos(*x*)

So, the derivative of 𝑓(𝑥)=𝑥sin⁡(𝑥)*f*(*x*)=*x*sin(*x*) is sin⁡(𝑥)+𝑥cos⁡(𝑥)sin(*x*)+*x*cos(*x*).

Among the given options, 𝑥cos⁡(𝑥)+sin⁡(𝑥)*x*cos(*x*)+sin(*x*) matches this result.

**You**

If f (x) = x^2 + 2x+ 3, then which of the following is true about it. NOTE:- where x^n denotes the nth power of x.

ChatGPT

**ChatGPT**

If (𝑥)=𝑥2+2𝑥+3*f*(*x*)=*x*2+2*x*+3, then:

1. (𝑥)*f*(*x*) is a quadratic function because its highest power of 𝑥*x* is 𝑥2*x*2.
2. The coefficient of 𝑥2*x*2 is 1, indicating that the parabola opens upwards.
3. The coefficient of 𝑥*x* is 2, indicating the linear term contributes positively to the slope of the parabola.
4. The constant term is 3, indicating the y-intercept is at 𝑦=3*y*=3.
5. The vertex of the parabola can be found by completing the square or using the formula 𝑥=−𝑏2𝑎*x*=−2*ab*​, where 𝑎*a* is the coefficient of 𝑥2*x*2 and 𝑏*b* is the coefficient of 𝑥*x*.

Given that (𝑥)=𝑥2+2𝑥+3*f*(*x*)=*x*2+2*x*+3, we can see that the leading coefficient is positive (𝑎=1*a*=1), so the parabola opens upwards.

Therefore, among the given options, the most relevant one would be that (𝑥)*f*(*x*) represents a quadratic function.

**You**

If f (x) = x^2 + 2x+ 3, then which of the following is true about it. NOTE:- where x^n denotes the nth power of x. Its derivative will be equal to 2 x + 1. Its derivative will be equal to 2 x + 2 Its derivative will be equal to 2 x + 2+1. None of these.

ChatGPT

**ChatGPT**

To find the derivative of 𝑓(𝑥)=𝑥2+2𝑥+3*f*(*x*)=*x*2+2*x*+3, you can use the power rule of differentiation, which states that if 𝑓(𝑥)=𝑥𝑛*f*(*x*)=*xn*, then 𝑓′(𝑥)=𝑛𝑥𝑛−1*f*′(*x*)=*nxn*−1.

Given (𝑥)=𝑥2+2𝑥+3*f*(*x*)=*x*2+2*x*+3:

Taking the derivative with respect to 𝑥*x*:

𝑓′(𝑥)=𝑑𝑑𝑥(𝑥2)+𝑑𝑑𝑥(2𝑥)+𝑑𝑑𝑥(3)*f*′(*x*)=*dxd*​(*x*2)+*dxd*​(2*x*)+*dxd*​(3) 𝑓′(𝑥)=2𝑥+2+0*f*′(*x*)=2*x*+2+0 𝑓′(𝑥)=2𝑥+2*f*′(*x*)=2*x*+2

So, the derivative of (𝑥)=𝑥2+2𝑥+3*f*(*x*)=*x*2+2*x*+3 is 2𝑥+22*x*+2.

Among the given options, the one that matches this result is "Its derivative will be equal to 2x + 2".

**You**

The function f(x)=x2−4 is concave down on the interval (−∞,∞) Nowhere (−∞,0) (0,∞)

ChatGPT

**ChatGPT**

To determine where the function (𝑥)=𝑥2−4*f*(*x*)=*x*2−4 is concave down, we need to find where its second derivative is negative.

First, find the first derivative of (𝑥)*f*(*x*):

𝑓′(𝑥)=𝑑𝑑𝑥(𝑥2−4)=2𝑥*f*′(*x*)=*dxd*​(*x*2−4)=2*x*

Now, find the second derivative:

𝑓′′(𝑥)=𝑑2𝑑𝑥2(2𝑥)=2*f*′′(*x*)=*dx*2*d*2​(2*x*)=2

The second derivative 𝑓′′(𝑥)*f*′′(*x*) is a constant (2), which is positive everywhere. This means that the function (𝑥)=𝑥2−4*f*(*x*)=*x*2−4 is concave up everywhere, and there are no intervals where it is concave down.

So, the correct answer is "Nowhere".

**You**

logb M/N=\_\_\_\_\_\_\_. logbM−logbN logbM+logbN MlogbN −logbN

ChatGPT

**ChatGPT**

To solve the logarithmic expression log⁡𝑏𝑀𝑁log*b*​*NM*​, we can use the properties of logarithms. One property states that the logarithm of a quotient is equal to the difference of the logarithms of the numerator and the denominator.

So,

log⁡𝑏𝑀𝑁=log⁡𝑏𝑀−log⁡𝑏𝑁log*b*​*NM*​=log*b*​*M*−log*b*​*N*

Therefore, the correct answer is "logbM - logbN".

**You**

Sec(x) is discontinuous at x=2π x=π/2 x=π x=0

ChatGPT

**ChatGPT**

The secant function sec⁡(𝑥)sec(*x*) is discontinuous where its denominator, cos⁡(𝑥)cos(*x*), is zero because division by zero is undefined.

The cosine function, cos⁡(𝑥)cos(*x*), is zero at 𝑥=𝜋2*x*=2*π*​ and 𝑥=3𝜋2*x*=23*π*​ (and at intervals of 𝜋*π* apart from these).

So, sec⁡(𝑥)sec(*x*) is discontinuous at 𝑥=𝜋2*x*=2*π*​ and 𝑥=3𝜋2*x*=23*π*​.

Therefore, among the options provided, the correct answer is 𝑥=𝜋2*x*=2*π*​ and 𝑥=3𝜋2*x*=23*π*​.

**You**

The derivative of y=Cosecx at x=0 is 0 1 -1 infinty

ChatGPT

**ChatGPT**

To find the derivative of 𝑦=csc⁡(𝑥)*y*=csc(*x*), we can use the definition of the cosecant function:

csc⁡(𝑥)=1sin⁡(𝑥)csc(*x*)=sin(*x*)1​

Now, let's find the derivative using the quotient rule:

𝑑𝑑𝑥(1sin⁡(𝑥))=−cos⁡(𝑥)sin⁡2(𝑥)*dxd*​(sin(*x*)1​)=−sin2(*x*)cos(*x*)​

Now, we need to evaluate this derivative at 𝑥=0*x*=0:

lim⁡𝑥→0−cos⁡(𝑥)sin⁡2(𝑥)lim*x*→0​−sin2(*x*)cos(*x*)​

At 𝑥=0*x*=0, sin⁡(𝑥)=0sin(*x*)=0 and cos⁡(𝑥)=1cos(*x*)=1, so the limit becomes:

lim⁡𝑥→0−102=−∞lim*x*→0​−021​=−∞

Therefore, the derivative of 𝑦=csc⁡(𝑥)*y*=csc(*x*) at 𝑥=0*x*=0 is −∞−∞.

**You**

The graph of function y=2 is a.....line with slope 0,is Horizontal Vertical

ChatGPT

**ChatGPT**

The graph of the function 𝑦=2*y*=2 is a horizontal line because the value of 𝑦*y* is constant (always 2) regardless of the value of 𝑥*x*.

Therefore, the correct answer is "Horizontal".

Top of Form