23. Which of the following is an equation for the line tangent to the graph of

at the point where *x*=-1

**Solution**

Use the formula of tangent equation to a graph of function *f*(*x*) at the point *x*0:

where

Substitute

**Answer:** .

25.

is ?

**Solution**

Use the formula of changing a difference of sines into a product of sines and cosines:

then

# Usethe First remarkable limit:

and

**Answer:** .

**27.** The table above gives selected values for a differentiable and decreasing function *f* and its derivative. If *f*-1 is the inverse function of *f*; what is the value of (*f*-1)'(2)?

|  |  |  |
| --- | --- | --- |
| *x* | *f*(*x*) | *f*’(*x*) |
| 0 | 49 | 0 |
| 1 | 2 | -8 |
| 2 | -1 | -80 |

**Solution**

Use the next theorem: If *f* is differentiable at *f*-1(x) and *f*'(*f*-1(x)) is not equal to zero, then *f*-1 is differentiable at *x* and the following differentiation formula holds.

As *f* is an invertible functionwith domain *X* and range *Y*, then , for every .

That is fromthe table.

Then using the formula we have

**Answer:**

**78.** The rate at which motor oil is Ieaking from an automobile is modeled by the function *L* defined by

for time *t* > 0. *L*(*t*) is measured in liters per hour, and r is measured in hours. How much oil leaks out of the automobile during the first half hour?

**Solution**

Let's find the function of change of volume of oil leaks out of the automobile *V*(*t*). For this find the integral the function :

Find the integral

Maclaurin series for *sin*(*x*):

then

Thus

**Answer:**