16.Find the derivative of y = e^x

17.Evaluate the definite integral of x^3 dx from x=1 to x=2

18.Find the equation of the tangent line to the graph of y = ln(x) at the point (1,0)

19.Evaluate the definite integral of (1/x^3) dx from x=1 to x=2

20.Find the equation of the normal line to the graph of y = sin(x) at the point (π/4,1/√2)

Answer:

1.Evaluate the limit as x approaches 0 of (sin(x))/(x):

Using L'Hopital's rule, we can take the limit of the derivative of numerator and denominator. The derivative of sin(x) is cos(x) and the derivative of x is 1. So the limit becomes:

lim(x->0) (sin(x))/(x) = lim(x->0) (cos(x))/1 = cos(0) = 1

2.Find the derivative of y = x^2:

The derivative of y = x^2 is dy/dx = 2x

3.Evaluate the definite integral of x^2 from x=0 to x=1:

The antiderivative of x^2 is (x^3)/3. So the definite integral is:

(x^3)/3 from 0 to 1 = (1^3)/3 - (0^3)/3 = (1/3) - 0 = 1/3

4.Find the second derivative of y = cos(x):