Q1.

a.

.

=

=

At x=9,= = 2.(3)3 = 54

At x=4,= = 2.(2)3 = 16

. = 54-16= 38

b.

.

Using integration by parts,

. = xln(x)-x+C

. = [ xln(x)-x]e1

At x=e,

e ln(e)-e=e(1)-e=0

At x=1,

1ln(1)-1=0-1=-1

. = 0-(-1)=1

c.

.

The integral of cos-1 is

= x cos-1(x)- +C

. = [xcos−1(x)−]10

At x=1,

1⋅cos−1(1)− = 1⋅0−0=0

At x=0,

0⋅cos−1(0)− = 0−1= -1

= 0-(-1) = 1

d.

.

The function cos() is even, because cos is an even function. For even functions, the integral over symmetric limits simplifies as,

. = 2

.

*.* = = sin(

. = [sin ( ]10

At x=1,

sin ( = sin ( = .1 =

At x=0,

sin ( = .0 = 0

.2 – 0) = 2 = 4

Q2.

a.

.

Let u=,

du=dx

dx =

. =

Simplifies,

.

. sin(u)+C

So, sin (x3)+C

b.

.

Let u=1+sin(3t),

du= 3cos(3t)dt

cos (3t)dt =

. = .

. du

The integral of is,

ln +C

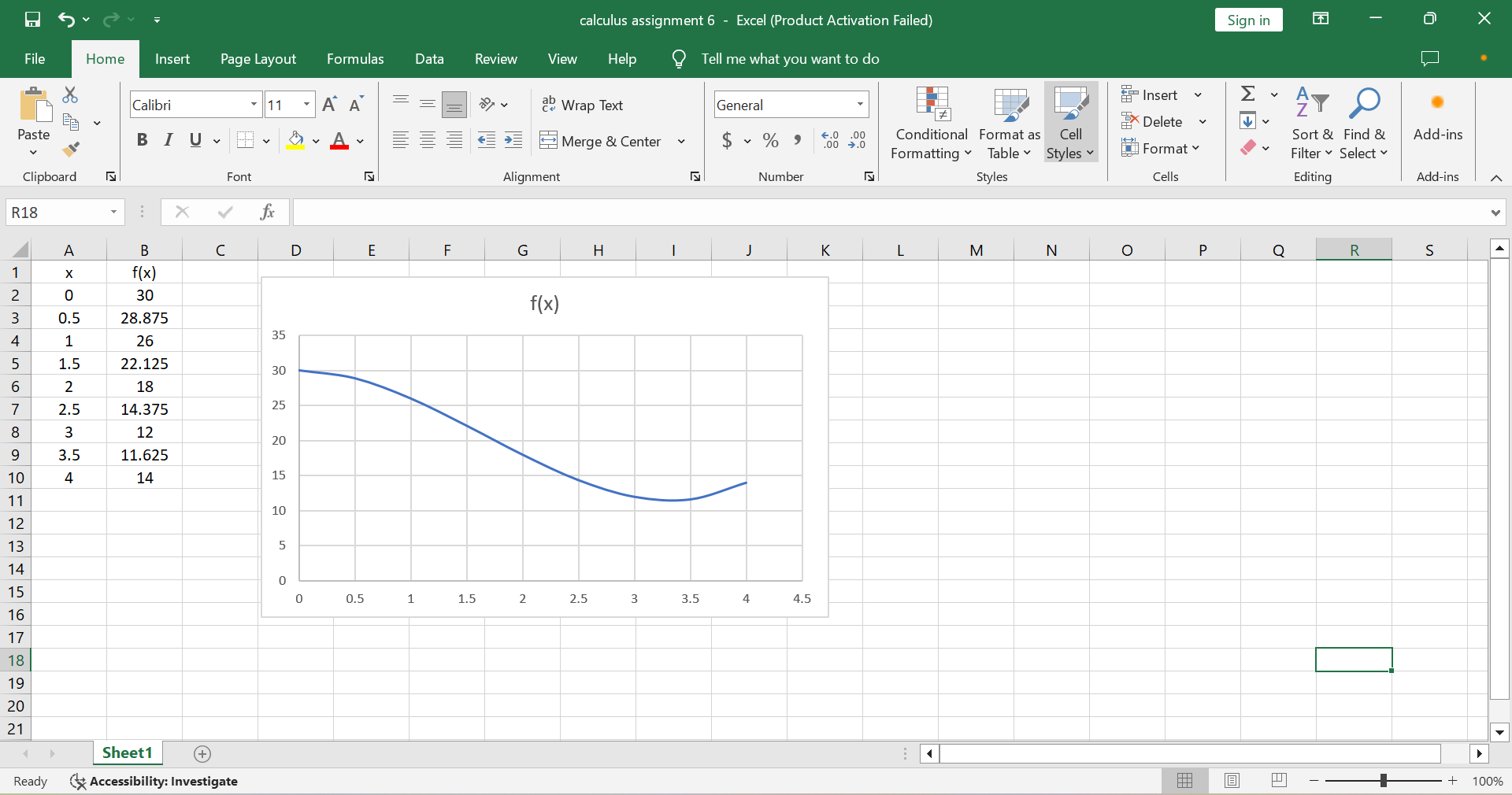
So, ln +C

Substitution,

. ln +C

Q3.

f(x)=x3-5x2+30



**.** = - +30x

At x=0: 0

At x=4: 64- +120 = 77.33

Average value: 19.33