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**COURSE CODE: MAT 104**

**COURSE TITLE: GENERAL MATHEMATICS**

**MATRIC NO: 19/ENG02/040**

**QUESTION**

Integrate the following with respect to their variables

1. x1/2ln x

2. 2cos6t cost

3. Sin3xcos4x

**Solution**

1. x1/2ln x

=

Let u= in(x) dv=

 du= 1/x v=

=udv = udv-

=

Solving

Applying linearity

=

Solving

=

Plugging in solved integrals

=

Therefore

=

1. 2cos6t cost

=

Applying linearity

= 2

Solving

=

 Applying linearity

=1/2

Now solving

Let u= 7t

du/dt=7

dt=1/7du

=1/7

Now solving

=sin u (this is because it is a standard integral)

Plugging in integrals

= sinu/7

Substitute u=7t

=sin(7t)/7

Now solving

Substitute u=5t

du/dt=5

dt=1/5du

=1/5

Now solving

=sin u (this is because it is a standard integral)

1/5

Undo substitution u=5t

=sin5t/5

Plug in solved integrals

½

= sin(7t)/7 + sin5t/5

Therefore

= sin(7t)/7 + sin5t/5 + c

1. Sin3xcos4x

=Sin3xcos4x dx

=Sin3xdx

=

Let cos(X)=u

du/dx= -sin(X)

dx=1/sin(X) dx

=du

Expand du

=du

Apply linearity

= du

Now solving du

=u5/5

Plugged in solved integrals

=u7/7-u5/5

Undo substitution u=cosx

=cos7x/7-cos5x/5+c