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MATRIC NO: 19/ENG05/010

COURSE CODE: MAT104 DR OYELAMI’S GROUP

ANSWERS

QUESTION ONE

 ∫exsinxdx

 Let U= ex dv=sinxdx

du= exdx v= -cosx

using ∫udu= uv -∫vdu

∫exsinxdx=-excosx + ∫excosxdx

Using the formula above on ∫excosxdx

∫exsinxdx= -excosx +exsinx -∫exsinxdx

Add ∫exsinxdx to both sides

2∫exsinxdx= exsinx-excosx

∫exsinxdx= ½(exsinx- excosx) + c

Question two

 ∫2x2lnxdx

Let X=lnx dv=2x2

du=$\frac{dx}{x}$ v= $\frac{2}{3}$ x^3

∫2x2lnxdx= $\frac{2}{3}$ x^3lnx - ∫$(\frac{2}{3}$ x^3.$\frac{dx}{x}$)

 = $\frac{2}{3}$ x^3lnx - $\frac{2}{3}$ .$\frac{x\^3}{3}$

 =$ \frac{2}{3}$ x^3 $(lnx-\frac{1}{3})$+ c

**Question three**

∫X2sinxdx

Let u= X2 dv=sinxdx

 du= 2xdx v= -cosx

∫X2sinxdx= -X2cosx + 2∫xcosxdx

 Now let u=x and dv= cosxdx. Then du=dx and v=sinx. Now using integration by part as done above again gives

 ∫X2sinxdx = -X2cosx + 2(xsinx - ∫sinxdx)

∫X2sinxdx = -X2cosx +2xsinx +2xcosx + c

∫X2sinxdx = (2-X2)cosx + 2xsinx + c

**Question four**

∫xcosxdx

Let u=x dv= cosxdx

du=dx v=sinx

∫xcosxdx= xsinx - ∫sinxdx

∫xcosxdx =xsinx + cosx + c

 THANK YOU.