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***19/eng03/019***

***Civil engineering***

***No 188***

***Mat 104***

1. ∫x1/2 lnx dx

Let v = Inx du = x1/2dx

dv/dx = x u = 2x3/2/3

dv = dx/x

using formula ∫vdu = uv - ∫udv

= 2x3/2/3 \* Inx - ∫2x3/2/3 \* dx/x

∫2x3/2/3 \* dx/x = 2x1/2/3 \* dx = 4x3/2/9 + C

1. ∫2cos6tcost dt

Let A = 6t and B = t

Hence cosAcosB = ½[cos(A+B) + cos(A-B)]

= ½[cos(7t) + cos(5t)]

=2/2[cos7t + cos5t]

∫2cos6tcost dt = cos7t + cos5t

= sin7t/7 + sion5t/5 + C

1. ∫sin3xcos4x dx

Given that m is odd, we have our u as cosx

Hence du/dx = -sinx and dx = -du/sinx

∫sin(sin2x) \* U4 dx

∫sinx(sin2x) \* U4 \* -du/sinx

∫sin2x \* U4 \* -du

-∫sin2x \* U4 \* du

Recall that sin2x = 1 – cos2x

-∫(1 – cos2x) U4 \* du

∫ (U2-1) U4 \* du

∫ (U6-U4) du

= U7/7 – U5/5 + C

= (cosx)7/7 – (cosx)5/5 + C.