This is a probability question. However, my real problem is with the integration of the problem.

For every one-dimensional set C for which the integral exists, let Q(C) = ∫c f(x) *dx* , where f(x) = 6x(1 – x) , 0 < x < 1, zero elsewhere, otherwise let Q(C) be undefined. If C1 = { x : ¼ < x < ¾ } , C2 = {1/2}, C3 = {x: 0 < x < 10}. Find Q(C1), Q(C2) and Q(C3).

Without doing any work I would think the C2 = 0. So I am concentrating on the other 2 problems. And I would also think that once I properly integrate the problem I would just plug in the numbers and get my solutions for C1 and C3.

So the problem as I see is this

∫ 6x(1-x) dx

= 6 ∫x(1 – x)dx

I would think that I would use Integration by parts.

u = x dv/dx = 1 –x

du/dx = 1 v = (x2 – 2x) / 2 ???????

Assuming the above are correct and I am not sure that they are what are the next step to solving this problem. I know from the answers in the back of the book that they should be Q(C1) = 11/16, Q(C2) = 0, Q(C3) = 1.