

مرفوعہ تاریخ کار در تکرار جو مکتبہ سید احمدی لاہور کی قیادت

پیشہ سرفہ ہائیر ایجوکیشن اور سائنس
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6. $\frac{d}{dt} \int_{a(t)}^{b(t)} f(x) dx = f(b(t)) \cdot b'(t) - f(a(t)) \cdot a'(t) + \int_{a(t)}^{b(t)} \frac{\partial f}{\partial t} dx$
 7. $\frac{d}{dt} \int_{a(t)}^{b(t)} f(x, t) dx = f(b(t), t) \cdot b'(t) - f(a(t), t) \cdot a'(t) + \int_{a(t)}^{b(t)} \frac{\partial f}{\partial t} dx$

1- $\frac{d}{dt} \int_0^t x^2 dx = t^2 \cdot 1 - 0 \cdot 0 + \int_0^t 2x dx = t^2 + x^2 \Big|_0^t = t^2 + t^2 = 2t^2$

2- $\frac{d}{dt} \int_0^t (t-x)^2 dx = (t-t)^2 \cdot 1 - 0 \cdot 0 + \int_0^t -2(t-x) dx = 0 - 0 + \int_0^t -2(t-x) dx = -2tx + x^2 \Big|_0^t = -2t^2 + t^2 = -t^2$

3- $\frac{d}{dt} \int_0^t e^{-x} dx = e^{-t} \cdot 1 - 0 \cdot 0 + \int_0^t -e^{-x} dx = e^{-t} - (-e^{-x}) \Big|_0^t = e^{-t} - (-e^{-t} + 1) = e^{-t} + e^{-t} - 1 = 2e^{-t} - 1$

4- $\frac{d}{dt} \int_0^t \cos(x) dx = \cos(t) \cdot 1 - 0 \cdot 0 + \int_0^t -\sin(x) dx = \cos(t) - (-\cos(x)) \Big|_0^t = \cos(t) - (-\cos(t) + 1) = \cos(t) + \cos(t) - 1 = 2\cos(t) - 1$

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7. $\frac{d}{dt} \int_0^t x^2 dx = t^2 \cdot 1 - 0 \cdot 0 + \int_0^t 2x dx = t^2 + x^2 \Big|_0^t = t^2 + t^2 = 2t^2$
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