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2.) $a\int^b \sqrt{x}\,dx =$

$= a\int^b x^{\frac{1}{2}} dx$

$2\left[\dfrac{x^{\frac{1}{2}+1}}{\frac{1}{2}+1}\right]_a^b$

$2\left[\dfrac{x^{\frac{1}{2}+1}}{\frac{1}{2}+1}\right] = \dfrac{2x^{\frac{3}{3}}}{3}$

$= \cancel{\left[\dfrac{x^{\frac{1}{2}+1}}{\frac{1}{2}+1}\right]}$

$= \left[\dfrac{x^{\frac{3}{2}} \cdot 2}{3}\right]_a^b$

$= \left[\dfrac{2}{3} x^{\frac{3}{2}}\right]_a^b$

$= \dfrac{2}{3}(b\sqrt{b} - a\sqrt{a})$,, (b)

3. $\int_1^n (2x-3)\,dx = 12$

$\int_1^n 2x\,dx - \int_1^n 3\,dx$

$= 2 \cdot 1 \int n\, x\, dx$

$= 2\left[\dfrac{x^{1+1}}{1+1}\right]_1^n$

$= 2\left[\dfrac{x^2}{2}\right]_1^n$

$= 2\left[\dfrac{n^2}{2} - \dfrac{1}{2}\right]$

$= n^2 - 1$

$= n^2 - 3n + 2$

$= n^2 - 3n + 2 = 12$

$n = \dfrac{-(-3) + \sqrt{(-3)^2 - 4.1(-10)}}{2.1}$

$= 5$,,

4. $\int_0^1 g(t)^2\,dt = 2$

$\left[\frac{1}{2} g(t)2\right]_0^1 = 2$

$\frac{1}{2} g(1)^2 - \frac{1}{2} g^0(0)^2 = 2$

$\frac{1}{2} g^2 - 0 = 2$

$g^2 = 4$

$g = 2$

$\int_2^1 g(t)\,at = -2$

$\left[\frac{1}{2} g(t)^2\right]_2^1 = -2$

$\left(\frac{1}{2} g(1)^2 - \frac{1}{2} g(2)^2\right] = -2$

$\frac{1}{2} g^2 - \frac{4}{2} g = -2$

$\frac{1}{2} g^2 - 2g = -2$

$\frac{1}{2} g^2 - 2g + 2 \quad \times 2$

$g^2 - 4g + 4 = 0$

$(g-2)(g-2) = 0$

$g = 2$

$\int_0^2 g(t)\,at$

$= \frac{1}{2} g(t)^2 \Big|_0^2$

$= \frac{1}{2} g(2)^2 - \frac{1}{2} g(10)2$

$= 2g \quad = 2(2) = 4$,,

5. $\int_0^n (\sin x - \sqrt{3}\cos x)\,dx =$

$\int \sin(x) - \sqrt{3}\cos(x)\,dx$

$\int 2\left(\frac{1}{2}\sin(x) - \frac{\sqrt{3}}{2}\cos(x)\right)dx$

$\int 2\left(\cos\left(\frac{\pi}{3}\right)\sin(x)^2 - \frac{\sqrt{3}}{2}\cos(x)\right)dx$

$\int 2\left(\cos\left(\frac{\pi}{3}\right)\sin x - \sin\left(\frac{\pi}{3}\right)\cos(x)\right)dx$

$\int 2\sin\left(x - \frac{\pi}{3}\right)dx \rightarrow 2x\int \sin\left(x - \frac{\pi}{3}\right)dx$

$2x\int \sin(t)\,dt \rightarrow 2x(-\cos(t)]\,dt$

$2x\left(-\cos\left(x - \frac{\pi}{3}\right)\right)$

$= [-\cos(x) - \sqrt{3}\sin x]_6^{\pi}$

$= [-\cos\pi - \sqrt{3}\sin\pi] - [-\cos 0 - \sqrt{3}\sin$

$= (1-0) - (-1-0)$

$= 1+1$

$= 2$,,.

SIDU