Answer for Question #51612 – Math – Integral Calculus

Question. Calculate the integral:

$$\int (104v - 632v^2)dv$$

Solution. Indefinite integral is

$$\int (104v - 632v^2)dv = \frac{104 \cdot v^2}{2} - \frac{632 \cdot v^3}{3} + C = 52v^2 - \frac{632\, v^3}{3} + C.$$

The definite integral on the interval $[a, b]$ is

$$\int_a^b (104v - 632v^2)dv = \left(52b^2 - \frac{632\, b^3}{3}\right) - \left(52a^2 - \frac{632\, a^3}{3}\right) =$$

$$= 52(b^2 - a^2) - \frac{632\,(b^3 - a^3)}{3}.$$

Answer.

$\int (104v - 632v^2)dv = 52v^2 - \frac{632\, v^3}{3} + C.$

$\int_a^b (104v - 632v^2)dv = 52(b^2 - a^2) - \frac{632\,(b^3 - a^3)}{3}.$