Answer on Question #79192 – Math – Differential Equations:

Question: Let A be a constant. Find the general solution of y ′ − A y = 0.

(a). y = c e^{Ax}

(b). y = − c e^{Ax}

(c). y = e^{Ax}

(d). y = − e^{Ax}

Solution: Differential equation is given by

y ′ − A y = 0,

or $\frac{dy}{dx} - Ay = 0$, [As y ′=$\frac{dy}{dx}$]

or $\frac{1}{y}\frac{dy}{dx} = A$,

or $\frac{1}{y}$ dy = A dx .....(1)

Now integrating both sides of equation (1) and we get

ln (y) = Ax + ln (c), [where ln c is integration constant;]

or ln $(\frac{y}{c})$ =A x,

or $\frac{y}{c} = e^{Ax}$,

or y = c e^{Ax}.

Answer: option (a) is correct.