

Answer to Question #89432 – Math – Differential Equations

Question

1. Solve the equation $\frac{d^2t}{dx^2} - 4t = 0$.

Solution

$$\frac{d^2t}{dx^2} - 4t = 0$$

$$(D^2 - 4)t = 0$$

where, $D^2 \equiv \frac{d^2}{dx^2}$.

The auxiliary equation is $m^2 - 4 = 0$

$$\therefore m = \pm 2$$

Thus, the required solution for the given differential equation is,

$$t(x) = c_1 e^{2x} + c_2 e^{-2x}.$$