ECUACIÓN DIFERENCIAL

RESUELVA:

$$y'' + 5y = 2y'$$
$$y(0) = 1$$
$$y'(0) = 5$$

$$1) y'' - 2y' + 5y = 0$$

$$2) m^2 - 2m + 5 = 0$$
$$3) m_{1,2} = \frac{2 \pm \sqrt{4 - 20}}{2}$$

$$m_{1,2} = 1 \pm 2i$$

$$4) y = e^x (C_1 cos(2x) + C_2 sen(2x))$$

$$y(0) = 1 \Rightarrow 1 = C_1$$
$$y' = e^x(-2C_1 sen(2x) + 2C_2 cos(2x)) + e^x(C_1 cos(2x) + C_2 sen(2x))$$
$$y'(0) = 5 \Rightarrow 5 = 2C_2 + C_1$$
$$5 = 2C_2 + C_1 \therefore C_2 = 2$$

$$\textcolor{red}{6) y = e^x(cos(2x) + 2sen(2x))}$$

$$y'' - 2y' + 5y \quad = \quad 0 \tag{1}$$
$$m^2 - 2m + 5 \quad = \quad 0 \tag{2}$$
$$m_{1,2} \quad = \quad \frac{2 \pm \sqrt{4 - 20}}{2} \tag{3}$$

$$\therefore$$
$$\Downarrow$$

ALLI LE SIGUEN