Substitute

Find the General Solution

$8y'' - y' + 2y = 0$

$8r^2 - r + 2 = 0$

(Dealing with complex Numbers)

$$\frac{-(-1) \pm \sqrt{(-1)^2 - 4(8)(2)}}{2(8)} = r = \frac{1}{16} \pm \frac{\sqrt{-63}}{16} = \frac{1}{16} \pm \frac{\sqrt{63}}{16} i$$

$$\Downarrow$$

$$y = e^{\alpha x}\left[C_1 \cos \beta x + C_2 \sin \beta x\right]$$

$$\boxed{y = e^{\frac{1}{16}x}\left[C_1 \cos\left(\frac{3\sqrt{7}}{16}x\right) + C_2\left(\frac{3\sqrt{7}}{16}x\right)\right]}$$

$$\uparrow$$

General Solution

$$r_1 = \frac{1}{16} + \frac{3\sqrt{7}}{16} i$$

$$r_2 = \frac{1}{16} - \frac{3\sqrt{7}}{16} i$$

$r_1 = \alpha + \beta i$

$\alpha = \frac{1}{16}$

$\beta = \frac{3\sqrt{7}}{16}$