Solve $\frac{d^2 y(x)}{dx^2} - c\, y(x) = 0$ :

---

Assume a solution will be proportional to $e^{\lambda x}$ for some constant $\lambda$.

Substitute $y(x) = e^{\lambda x}$ into the differential equation:

$$\frac{d^2}{dx^2}\left(e^{\lambda x}\right) - c\, e^{\lambda x} = 0$$

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Substitute $\frac{d^2}{dx^2}\left(e^{\lambda x}\right) = \lambda^2 e^{\lambda x}$:

$$\lambda^2 e^{\lambda x} - c\, e^{\lambda x} = 0$$

---

Factor out $e^{\lambda x}$:

$$\left(-c + \lambda^2\right) e^{\lambda x} = 0$$

---

Since $e^{\lambda x} \neq 0$ for any finite $\lambda$, the zeros must come from the polynomial:

$$-c + \lambda^2 = 0$$

---

Solve for $\lambda$:

$\lambda = \sqrt{c}$ or $\lambda = -\sqrt{c}$

---

The root $\lambda = -\sqrt{c}$ gives $y_1(x) = k_1\, e^{-\sqrt{c}\, x}$ as a solution, where $k_1$ is an arbitrary constant.

The root $\lambda = \sqrt{c}$ gives $y_2(x) = k_2\, e^{\sqrt{c}\, x}$ as a solution, where $k_2$ is an arbitrary constant.

The general solution is the sum of the above solutions:

**Answer:**

$$y(x) = y_1(x) + y_2(x) = \frac{k_1}{e^{\sqrt{c}\, x}} + k_2\, e^{\sqrt{c}\, x}$$

Solve $\frac{d^2 y(x)}{dx^2} - c\, y(x) = 0$ :

---

Assume a solution will be proportional to $e^{\lambda x}$ for some constant $\lambda$.

Substitute $y(x) = e^{\lambda x}$ into the differential equation:

$$\frac{d^2}{d x^2}\left(e^{\lambda x}\right) - c\, e^{\lambda x} = 0$$

---

Substitute $\frac{d^2}{dx^2}\left(e^{\lambda x}\right) = \lambda^2 e^{\lambda x}$:

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The general solution is the sum of the above solutions:

**Answer:**

$$y(x) = y_1(x) + y_2(x) = \frac{k_1}{e^{\sqrt{c}\, x}} + k_2\, e^{\sqrt{c}\, x}$$