

> restart

>

$$\frac{d^5 y}{dx^5} - 6 \frac{d^4 y}{dx^4} + 15 \frac{d^3 y}{dx^3} - 18 \frac{d^2 y}{dx^2} + 14 \frac{dy}{dx} - 4y = 0$$

> expand((m-2)·(m-1)·2·(m-1-I)·(m-1+I))=0;

$$m^5 - 6m^4 - 4 + 15m^3 - 20m^2 + 14m = 0$$

(1)

> Ecuacion := diff(y(x), x\$5) - 6·diff(y(x), x\$4) + 15·diff(y(x), x\$3) - 20·diff(y(x), x\$2) + 14·diff(y(x), x) - 4·y(x) = 0

$$\text{Ecuacion} := \frac{d^5}{dx^5} y(x) - 6 \left(\frac{d^4}{dx^4} y(x) \right) + 15 \left(\frac{d^3}{dx^3} y(x) \right) - 20 \left(\frac{d^2}{dx^2} y(x) \right) + 14 \left(\frac{d}{dx} y(x) \right) - 4y(x) = 0$$

(2)

> Solucion := dsolve(Ecuacion)

$$\text{Solucion} := y(x) = _C1 e^{2x} + _C2 e^x + _C3 e^x x + _C4 e^x \sin(x) + _C5 e^x \cos(x)$$

(3)

> restart

>

$$\frac{d^4 y}{dx^4} + 8 \frac{d^2 y}{dx^2} + 16y = 0$$

> Ecuacion := diff(y(x), x\$4) + 8·diff(y(x), x\$2) + 16·y(x) = 0

$$\text{Ecuacion} := \frac{d^4}{dx^4} y(x) + 8 \left(\frac{d^2}{dx^2} y(x) \right) + 16y(x) = 0$$

(4)

> Solucion := dsolve(Ecuacion)

$$\text{Solucion} := y(x) = _C1 \sin(2x) + _C2 \cos(2x) + _C3 \sin(2x)x + _C4 \cos(2x)x$$

(5)

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