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PAUTA Tarea 2

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Inicialización

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[> restart;  
[> with(DEtools) :  
[> with(plots):  
[> with(linalg):  
[> with(PDEtools) :  
[>
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P1 i

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[> p1 := diff(y(t), t$6) + 72·diff(y(t), t$2) - 1720·y(t) = 0;
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$$p1 := \frac{d^6}{dt^6} y(t) + 72 \left(\frac{d^2}{dt^2} y(t) \right) - 1720 y(t) = 0 \quad (3.1)$$

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[> solu1 := rhs(dsolve(p1, y(t)))
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$$solu1 := _C1 e^{\sqrt{10} t} + _C2 e^{-\sqrt{10} t} \quad (3.2)$$

$$+ _C3 e^{-\frac{1}{2} \sqrt{-10 + 4\sqrt{43}} t} \sin\left(\frac{1}{2} \sqrt{10 + 4\sqrt{43}} t\right)$$

$$- _C4 e^{\frac{1}{2} \sqrt{-10 + 4\sqrt{43}} t} \sin\left(\frac{1}{2} \sqrt{10 + 4\sqrt{43}} t\right)$$

$$+ _C5 e^{-\frac{1}{2} \sqrt{-10 + 4\sqrt{43}} t} \cos\left(\frac{1}{2} \sqrt{10 + 4\sqrt{43}} t\right)$$

$$+ _C6 e^{\frac{1}{2} \sqrt{-10 + 4\sqrt{43}} t} \cos\left(\frac{1}{2} \sqrt{10 + 4\sqrt{43}} t\right)$$

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[> evalf(solu1);
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$$_C1 e^{3.162277660 t} + _C2 e^{-3.162277660 t} \quad (3.3)$$

$$+ _C3 e^{-2.014308448 t} \sin(3.009557862 t) - _C4 e^{2.014308448 t} \sin(3.009557862 t)$$

$$+ _C5 e^{-2.014308448 t} \cos(3.009557862 t) + _C6 e^{2.014308448 t} \cos(3.009557862 t)$$

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[>
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▼ P1 ii

$$> p2 := \text{diff}(y(t), t\$3) - 15 \cdot \text{diff}(y(t), t\$2) - 33 \cdot \text{diff}(y(t), t) + 847 \cdot y(t) = 0;$$

$$p2 := \frac{d^3}{dt^3} y(t) - 15 \left(\frac{d^2}{dt^2} y(t) \right) - 33 \left(\frac{d}{dt} y(t) \right) + 847 y(t) = 0 \quad (4.1)$$

$$> \text{solu2} := \text{rhs}(\text{dsolve}(p2, y(t)))$$

$$\text{solu2} := _C1 e^{-7t} + _C2 e^{11t} + _C3 e^{11t} t \quad (4.2)$$

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▼ P2 i

$$> p3 := \text{diff}(y(t), t\$2) = 10 \cdot \text{diff}(y(t), t) - 25 \cdot y(t);$$

$$p3 := \frac{d^2}{dt^2} y(t) = 10 \left(\frac{d}{dt} y(t) \right) - 25 y(t) \quad (5.1)$$

$$> \text{solu1} := \text{rhs}(\text{dsolve}(p3, y(t)))$$

$$\text{solu1} := _C1 e^{5t} + _C2 e^{5t} t \quad (5.2)$$

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▼ P2 ii

$$> p4 := \text{diff}(y(t), t\$3) + 3 \cdot \text{diff}(y(t), t\$2) - 4 \cdot \text{diff}(y(t), t) - 12 \cdot y(t) = 0;$$

$$p4 := \frac{d^3}{dt^3} y(t) + 3 \left(\frac{d^2}{dt^2} y(t) \right) - 4 \left(\frac{d}{dt} y(t) \right) - 12 y(t) = 0 \quad (6.1)$$

$$> \text{solu1} := \text{rhs}(\text{dsolve}(p4, y(t)))$$

$$\text{solu1} := _C1 e^{-2t} + _C2 e^{-3t} + _C3 e^{2t} \quad (6.2)$$

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▼ P2 iii

$$> p5 := \text{diff}(y(t), t\$4) - 2 \cdot \text{diff}(y(t), t\$2) + y(t) = 0;$$

$$p5 := \frac{d^4}{dt^4} y(t) - 2 \left(\frac{d^2}{dt^2} y(t) \right) + y(t) = 0 \quad (7.1)$$

$$> \text{solu1} := \text{rhs}(\text{dsolve}(p5, y(t)))$$

$$\text{solu1} := _C1 e^t + _C2 e^t t + _C3 e^{-t} + _C4 e^{-t} t \quad (7.2)$$

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P2 iv

> $p6 := 2 \cdot \text{diff}(y(t), t\$5) - 7 \cdot \text{diff}(y(t), t\$4) + 12 \cdot \text{diff}(y(t), t\$3) + 8 \cdot \text{diff}(y(t), t\$2) = 0;$

$$p6 := 2 \left(\frac{d^5}{dt^5} y(t) \right) - 7 \left(\frac{d^4}{dt^4} y(t) \right) + 12 \left(\frac{d^3}{dt^3} y(t) \right) + 8 \left(\frac{d^2}{dt^2} y(t) \right) = 0 \quad (8.1)$$

> $\text{solu1} := \text{rhs}(\text{dsolve}(p6, y(t)))$

$$\text{solu1} := _C1 + _C2 t + _C3 e^{-\frac{1}{2}t} + _C4 e^{2t} \sin(2t) + _C5 e^{2t} \cos(2t) \quad (8.2)$$

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