

Βρείτε τις λύσεις των ακόλουθων προβλημάτων αρχικών τιμών:

1. $y'''(t) - 2y''(t) - 8y'(t) = -27e^t$, $y(0) = 3$, $y'(0) = -7$, $y''(0) = -25$.

2. $y'''(t) - \frac{5}{2}y''(t) + y'(t) = 9e^{-t}$, $y(0) = -3$, $y'(0) = 2$, $y''(0) = 1$.

3. $y'''(t) - 2y''(t) - 7y'(t) - 4y(t) = 10e^{-t}$, $y(0) = 4$, $y'(0) = 0$, $y''(0) = 19$.

4. $y'''(t) - y''(t) - 8y'(t) + 12y(t) = 20e^{2t}$, $y(0) = 1$, $y'(0) = 8$, $y''(0) = 7$.

5. $y'''(t) - 2y'(t) + 4y(t) = 4t - 14$,
 $y(0) = -3$, $y'(0) = 6$, $y''(0) = 0$.

6. $y'''(t) + 3y''(t) + 7y'(t) + 5y(t) = -8e^{-t}$,
 $y(0) = 3$, $y'(0) = -7$, $y''(0) = 11$.

7. $y^{(4)}(t) - 2y^{(3)}(t) + y^{(2)}(t) = -2$,
 $y(0) = -3$, $y'(0) = 0$, $y''(0) = 1$, $y'''(0) = 5$.

8. $y^{(4)}(t) - y^{(3)}(t) + 4y^{(2)}(t) - 4y^{(1)}(t) = -3(\cos(t) + \sin(t))$,
 $y(0) = -1$, $y'(0) = 5$, $y''(0) = 6$, $y'''(0) = -7$.

9. $y^{(4)}(t) + y^{(3)}(t) - y^{(2)}(t) + y^{(1)}(t) - 2y(t) = -4\cos(t) + 12\sin(t)$,
 $y(0) = 2$, $y'(0) = 5$, $y''(0) = -5$, $y'''(0) = 3$.

10. $y^{(4)}(t) - 2y^{(3)}(t) - 2y^{(2)}(t) + 6y^{(1)}(t) + 5y(t) = -20e^{-t}$,
 $y(0) = -1$, $y'(0) = 1$, $y''(0) = 1$, $y'''(0) = 29$.

11. $y^{(4)}(t) - 3y^{(3)}(t) + y^{(2)}(t) + 3y^{(1)}(t) - 2y(t) = -8e^{-t}$,
 $y(0) = -2$, $y'(0) = -8$, $y''(0) = -5$, $y'''(0) = -12$.

12. $4y^{(4)}(t) - 16y^{(3)}(t) + 17y^{(2)}(t) - 4y^{(1)}(t) + 4y(t) = 15\cos(\frac{t}{2}) + 8\sin(\frac{t}{2})$,
 $y(0) = -1$, $y'(0) = 1$, $y''(0) = \frac{21}{4}$, $y'''(0) = 12$.

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