

LaPlace transform Homework Problems #3

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Pat Rossi

Name _____

Instructions. Solve each initial value problem by using LaPlace Transforms. (In each case, assume that y is a function of t .)

1. $y' + 2y = 0$; $y(0) = 1$
2. $y'' + 3y' - 4y = 0$; $y(0) = 0$; $y'(0) = -5$
3. $y'' + 2y' + y = 2te^{-t}$; $y(0) = 3$; $y'(0) = -3$
4. $y'' - y = 6e^t$; $y(0) = 2$; $y'(0) = 3$
5. $y'' + 10y' + 25y = 2e^{-5t}$; $y(0) = 0$; $y'(0) = -1$
6. $y'' - 9y' + 18y = 54$; $y(0) = 0$; $y'(0) = -3$
7. $y'' + 9y = e^t$; $y(0) = 0$; $y'(0) = 0$
8. $y'' + 10y' + 26y = 37e^t$; $y(0) = 1$; $y'(0) = 2$
9. $y''' + y = 1$; $y(0) = 1$; $y'(0) = 3$; $y''(0) = -3$
10. $y'' + 6y' + 9y = 27t$; $y(0) = 1$; $y'(0) = 0$
11. $y'' - 3y' - 4y = 25te^{-t}$; $y(0) = 0$; $y'(0) = 4$
12. $y'' + 2y' - 15y = 16te^{-t} - 15$; $y(0) = 1$; $y'(0) = -9$
13. $y'' + 7y' + 10y = 3e^{-2t} - 6e^{-5t}$; $y(0) = 0$; $y'(0) = 0$
14. $y''' - y = 12 \sinh(t)$; $y(0) = 6$; $y'(0) = -1$; $y''(0) = 7$
15. $y'' + 4y' + 5y = 39e^t \sin(t)$; $y(0) = -1$; $y'(0) = -1$
16. $y'' - 4y' + 4y = 3te^{2t} - 4$; $y(0) = 0$; $y'(0) = 0$
17. $y''' + 8y = -12e^{-2t}$; $y(0) = -8$; $y'(0) = 24$; $y''(0) = -46$
18. $y'' + 7y' + 6y = 250e^t \cos(t)$; $y(0) = 2$; $y'(0) = -7$