section 4.5

2. we look for a particular solution $y(t) = ae^{-t}$. $a = (-3)/((-1)^2+6(-1)+8) = -1$, thus $y(t) = -e^{-t}$
4. we look for a particular solution $y(t) = ae^{2t}$. $a = 18/(2^2+3\cdot2-18) = -9/4$
8. try $y(t) = a\cos 3t + b\sin 3t$. we have $-9a + 7\cdot 3b + 10a = 0$ and $-9b - 7\cdot 3a + 10b = -4$. $a = 42/221, b = -2/221$
12. $y(t) = -(21/100)\cos 2t + (3/100)\sin 2t$
18. the general solution for homogeneous equation is $y(t) = c_1e^{-t} + c_2e^{-2t}$ and we have a particular solution $y_p(t) = ae^{-4t}$ with $a = 3/((-4)^2+3(-4)+2) = 1/2$. Initial conditions give $c_1 + c_2 + 1/2 = 1, -c_1 - 2c_2 - 2 = 0$, then $c_1 = 3, c_2 = -5/2$, therefore the solution is $3e^{-t} - \frac{5}{2}e^{-2t} + \frac{1}{2}e^{-4t}$
20. $y(t) = e^{-t}(c_1\cos t + c_2\sin t) + a\cos 2t + b\sin 2t$. We have $-4a+4b+2a = 2, -4b - 4a + 2b = 0$, implying $a = -1/5, b = 2/5$. Then $c_1 = -9/5, c_2 = -13/5$
26. $y(t) = t\sin 2t$

section 4.6

2. $y_p(t) = \frac{1}{2}t\sin 2t + \frac{1}{4}\ln(\cos 2t)\cos 2t$
6. $y_p(t) = \frac{1}{2}t^2e^{2t}$
14. $y(t) = c_1t^{-1} + c_2t^{-1}\ln t + \frac{1}{2}t^{-1}(\ln t)^2$

section 4.7

10. $c_1\cos 5t + c_2\sin 5t + \frac{2}{5}t\sin(5t)$
12. $\frac{3}{2}\sin(2t)$
13. $-\frac{21}{130}\sin 4t - \frac{6}{65}\cos 4t$