In[25]:=
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(*SOLUCIONES A LA TAREA 5*)

(*1*)eq1 = y'''[x] + 5 * y''[x] + y'[x] - y[x] == 0;
ic1 = {y[0] == 0, y'[0] == 1, y''[0] == -1};
sol1 = DSolve[{eq1, ic1}, y[x], x];
Simplify[sol1]

(*2*)
eq2 = y''[t] - 7 * y'[t] + 10 * y[t] == 9 * Cos[t] + 7 * Sin[t];
ic2 = {y[0] == 5, y'[0] == -4};
sol2 = DSolve[{eq2, ic2}, y[t], t];
Simplify[sol2]

(*3*)
eq3 = y'[t] + 6 * y[t] == E^(4 * t);
ic3 = {y[0] == 2};
sol3 = DSolve[{eq3, ic3}, y[t], t];
Simplify[sol3]

(*4*)
eq4 = y''[t] + y[t] == Sin[2 * t];
ic4 = {y[0] == 0, y'[0] == 1};
sol4 = DSolve[{eq4, ic4}, y[t], t];
Simplify[sol4]

(*5*)
eq5 = y'''[t] + y''[t] + 3 * y'[t] - 5 * y[t] == 16 * E^(-t);
ic5 = {y[0] == 1, y'[0] == 1, y''[0] == 3};
sol5 = DSolve[{eq5, ic5}, y[t], t];
Simplify[sol5]

(*6*)
eq6 = y'''[x] - 2 * y''[x] + y'[x] == 2 * E^x + 2 * x;
ic6 = {y[0] == 0, y'[0] == 0, y''[0] == 0};
sol6 = DSolve[{eq6, ic6}, y[x], x];
Simplify[sol6]
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Out[28]=
$$\left\{\left\{y[x] \to \left(e^{x\sqrt{-4.74\ldots}}\left(-\sqrt{-0.604\ldots}-\sqrt{-0.604\ldots}^{2}+\sqrt{0.349\ldots}+\sqrt{0.349\ldots}^{2}\right)+e^{x\sqrt{0.349\ldots}}\left(-18+2\sqrt{-0.604\ldots}+2\sqrt{-0.604\ldots}^{2}+\sqrt{0.349\ldots}+\sqrt{0.349\ldots}^{2}\right)-e^{x\sqrt{-0.604\ldots}}\left(\sqrt{-0.604\ldots}+\sqrt{-0.604\ldots}^{2}+2\left(-9+\sqrt{0.349\ldots}+\sqrt{0.349\ldots}^{2}\right)\right)\right)\Big/\left(\left(\sqrt{-4.74\ldots}-\sqrt{-0.604\ldots}\right)\left(\sqrt{-4.74\ldots}-\sqrt{0.349\ldots}\right)\left(\sqrt{-0.604\ldots}-\sqrt{0.349\ldots}\right)\right)\right)\right\}\right\}$$

Out[32]=
$$\left\{\left\{y[t] \to 8\,e^{2t} - 4\,e^{5t} + \text{Cos}[t]\right\}\right\}$$

Out[36]= $\left\{\left\{y[t] \to \frac{1}{10}\, e^{-6t}\left(19 + e^{10t}\right)\right\}\right\}$

Out[40]= $\left\{\left\{y[t] \to \frac{1}{3}\,(5\,\text{Sin}[t] - 2\,\text{Cos}[t]\,\text{Sin}[t])\right\}\right\}$

Out[44]= $\left\{\left\{y[t] \to \frac{1}{4}\, e^{-t}\left(-8 + 9\,e^{2t} + 3\,\text{Cos}[2t] - 5\,\text{Sin}[2t]\right)\right\}\right\}$

Out[48]= $\left\{\left\{y[x] \to (2+x)\,\left(2 + e^{x}\,(-2+x) + x\right)\right\}\right\}$