

In[6]:= **sol1 = DSolve[y''[x] + 5\*y'[x] - 6\*y[x] == 0, y, x]**

Out[6]=  $\left\{ \left\{ y \rightarrow \text{Function}\left[\{x\}, e^{-6x} C[1] + e^x C[2]\right] \right\} \right\}$

In[7]:= **Solve[m^2 + 5 m - 6 == 0, m]**

Out[7]=  $\{\{m \rightarrow -6\}, \{m \rightarrow 1\}\}$

In[8]:= **sol2 = DSolve[y''[x] - 6\*y'[x] + 9\*y[x] == 0, y, x]**

Out[8]=  $\left\{ \left\{ y \rightarrow \text{Function}\left[\{x\}, e^{3x} C[1] + e^{3x} x C[2]\right] \right\} \right\}$

In[9]:= **sol3 = DSolve[y''[x] - y'[x] + y[x] == 0, y, x]**

Out[9]=  $\left\{ \left\{ y \rightarrow \text{Function}\left[\{x\}, e^{x/2} C[1] \cos\left[\frac{\sqrt{3} x}{2}\right] + e^{x/2} C[2] \sin\left[\frac{\sqrt{3} x}{2}\right]\right] \right\} \right\}$

In[16]:= **sol4 = DSolve[y''[x] - y'[x] + y[x] == x, y, x]**

Out[16]=  $\left\{ \left\{ y \rightarrow \text{Function}\left[\{x\}, 1 + x + e^{x/2} C[1] \cos\left[\frac{\sqrt{3} x}{2}\right] + e^{x/2} C[2] \sin\left[\frac{\sqrt{3} x}{2}\right]\right] \right\} \right\}$

In[18]:= **FullSimplify[sol4]**

Out[18]=  $\left\{ \left\{ y \rightarrow \text{Function}\left[\{x\}, 1 + x + e^{x/2} C[1] \cos\left[\frac{\sqrt{3} x}{2}\right] + e^{x/2} C[2] \sin\left[\frac{\sqrt{3} x}{2}\right]\right] \right\} \right\}$

In[21]:= **sol5 = DSolve[y''[x] + y[x] == 0, y, x]**

Out[21]=  $\left\{ \left\{ y \rightarrow \text{Function}\left[\{x\}, C[1] \cos[x] + C[2] \sin[x]\right] \right\} \right\}$