

In[114]:=

```
MatrixForm[A = {{3.0, -12.0, 5.0}, {-3.0, -1.0, 3.0}, {2.0, 2.0, -10.0}}]
MatrixForm[B = {6.0, 2.0, 7.0}]
lie1 = A.{x1, x2, x3} == B
```

Out[114]//MatrixForm=

$$\begin{pmatrix} 3. & -12. & 5. \\ -3. & -1. & 3. \\ 2. & 2. & -10. \end{pmatrix}$$

Out[115]//MatrixForm=

$$\begin{pmatrix} 6. \\ 2. \\ 7. \end{pmatrix}$$

Out[116]=

$$\{3. x_1 - 12. x_2 + 5. x_3, -3. x_1 - 1. x_2 + 3. x_3, 2. x_1 + 2. x_2 - 10. x_3\} == \{6., 2., 7.\}$$

In[117]:=

```
Solve[lie1, {x1, x2, x3}]
```

Out[117]=

```
{{x1 -> -1.475, x2 -> -1.4, x3 -> -1.275}}
```

In[118]:=

```
LinearSolve[A, B]
```

Out[118]=

```
{-1.475, -1.4, -1.275}
```

```
MatrixForm[A = {{3.0, -12.0, 5.0}, {-3.0, -1.0, 3.0}, {2.0, 2.0, -10.0}}]
```

```
MatrixForm[B = {6.0, 2.0, 7.0}];
```

```
MatrixForm[aug1 = Transpose[Join[Transpose[A], {B}]]]
```

```
MatrixForm[r = RowReduce[aug1]
```

```
x = r[[All, 4]]
```

In[119]:=

```
MatrixForm[g1 = UpperTriangularize[aug1]
```

 **UpperTriangularize**: Argument aug1 at position 1 is not a non-empty rectangular matrix.

Out[119]//MatrixForm=

```
UpperTriangularize[aug1]
```

In[120]:=

```
MatrixForm[A = {{4.0, 3.0, 2.0}, {2.0, -11.0, 6.0}, {1.0, 2.0, -10.0}}]
MatrixForm[B = {4.0, 2.0, 7.0}]
lie1 = A.{Subscript[x, 1], Subscript[x, 2], Subscript[x, 3]} == B
```

Out[120]//MatrixForm=

$$\begin{pmatrix} 4. & 3. & 2. \\ 2. & -11. & 6. \\ 1. & 2. & -10. \end{pmatrix}$$

Out[121]//MatrixForm=

$$\begin{pmatrix} 4. \\ 2. \\ 7. \end{pmatrix}$$

Out[122]=

$$\{4. x_1 + 3. x_2 + 2. x_3, 2. x_1 - 11. x_2 + 6. x_3, 1. x_1 + 2. x_2 - 10. x_3\} == \{4., 2., 7.\}$$