```
> with(DifferentialGeometry) : with(LieAlgebras) : with(Library) :
> StructureEquation := [[x, y] = y];
```

$$StructureEquation := [[x, y] = y] \quad (1)$$

```
> L := LieAlgebraData(StructureEquation, [x, y], Alg1);
```

$$L := [[e1, e2] = e2] \quad (2)$$

```
> DGsetup(L);
```

Lie algebra: Alg1 (3)

```
Alg1 > MultiplicationTable("LieTable");
```

$$\left[\begin{array}{cccc} & `|` & e1 & e2 \\ & --- & ---- & ---- \\ e1 & `|` & 0 & e2 \\ e2 & `|` & -e2 & 0 \end{array}\right] \quad (4)$$

```
Alg1 > C := Center( )
```

$$C := [\ ] \quad (5)$$

```
Alg1 > A := DerivedAlgebra( )
```

$$A := [e2] \quad (6)$$

So, <y> is the only proper ideal. So every 1-dimensional subspace is <b> or <a+kb>. So adjoint group factorizes as $e^{ad\$\langle b\rangle} e^{ad\$\langle a+kb\rangle}$.

Now, we will find the conjugates of <a+kb> under $e^{t\,ad\,b}$.

```
Alg1 > g := (x, y) ↦ y + t·LieBracket(x, y)
```

$$g := (x, y) \rightarrow y + t\ DifferentialGeometry{:-}LieBracket(x, y) \quad (7)$$

```
Alg1 > g(e2, e1 + k·e2)
```

$$e1 + k\,e2 - t\,e2 \quad (8)$$

Thus, <a+kb>∼<a>. Hence representatives of 1-dimensional subalgebras are <a> and <b>.