

```
In[46]:= M1 = {
  {l c, -c b},
  {a b (1 + l c), -a Subscript[r, y] - c b^2 a}
};
M1 // MatrixForm
{vals, vecs} = Eigensystem[M1];
vals[[2]] (* Eigenvalue of M1 *)
{1, vecs[[2]] [[2]] / vecs[[2]] [[1]]} (* Corresponding eigenvector *)
```

```
Out[47]//MatrixForm=

$$\begin{pmatrix} c l & -b c \\ b (1 + c l) a & -b^2 c a - a r_y \end{pmatrix}$$

```

```
Out[49]=

$$\frac{1}{2} \left( c l - b^2 c a - a r_y + \sqrt{(-c l + b^2 c a + a r_y)^2 - 4 (b^2 c a - c l a r_y)} \right)$$

```

```
Out[50]=

$$\left\{ 1, \right. \\ \left. - \frac{2 b (1 + c l) a}{-c l - b^2 c a - a r_y - \sqrt{c^2 l^2 - 4 b^2 c a - 2 b^2 c^2 l a + b^4 c^2 a^2 + 2 c l a r_y + 2 b^2 c a^2 r_y + a^2 r_y^2}} \right\}$$

```

```
In[51]:= A1 = -a * Subscript[r, y] - 3 * l * c * a * Subscript[r, y] + l * c;
B1 = 2 * l * c * a * Subscript[r, y];
F1 = c^2 * l^2 - 4 * b^2 * c * a -
  2 * b^2 * c^2 * l * a + b^4 * c^2 * a^2 + 2 * c * l * a * Subscript[r, y] +
  2 * b^2 * c * a^2 * Subscript[r, y] + a^2 * Subscript[r, y]^2;
Simplify[A1^2 - 4 B1 - F1 /. {b -> Sqrt[3 l Subscript[r, y]]}]
(* Check that F1 = A1^2 - 4 B1. *)
```

```
Out[54]=
0
```