A CliffordBasic solution to an R4 linear system a x + b y = c, using wedge products to solve. Also includes mmacell output to embed the solution in the book as Mathematica input and output.

Solve: **a** x + **b** y = **c**

```
<< CliffordBasic`;
$SetSignature = {4, 0};
```

```
Import[
 "https://raw.githubusercontent.com/jkuczm/MathematicaCellsToTeX/master/NoInstall.
   m"]

(*Import[
  "https://raw.githubusercontent.com/jkuczm/MathematicaSyntaxAnnotations/master/
    BootstrapInstall.m"]
 Import["https://raw.githubusercontent.com/jkuczm/MathematicaCellsToTeX/master/
    BootstrapInstall.m"]*)
```

```
ClearAll[a, b, c, iab, aWedgeB, cWedgeB, aWedgeC, x, y]
a = e[1] + e[2];
b = e[1] + e[4];
c = e[1] + 2 e[2] - e[4];

aWedgeB = OuterProduct[a, b];
cWedgeB = OuterProduct[c, b];
aWedgeC = OuterProduct[a, c];

(* 1/aWedgeB *)
iab = aWedgeB / GeometricProduct[aWedgeB, aWedgeB];
x = GeometricProduct[ iab, cWedgeB];
y = GeometricProduct[ iab, aWedgeC];

{{"a ∧ b = ", aWedgeB}, {"c ∧ b = ", cWedgeB},
  {"a ∧ c = ", aWedgeC}, {"x = ", x}, {"y = ", y}
 } // Grid
```

```
a ∧ b =     - e[1, 2] + e[1, 4] + e[2, 4]
c ∧ b =   - 2 e[1, 2] + 2 e[1, 4] + 2 e[2, 4]
a ∧ c =      e[1, 2] - e[1, 4] - e[2, 4]
  x =                   2
  y =                  - 1
```

Generate cells

junk. first experimentation with mmaCell