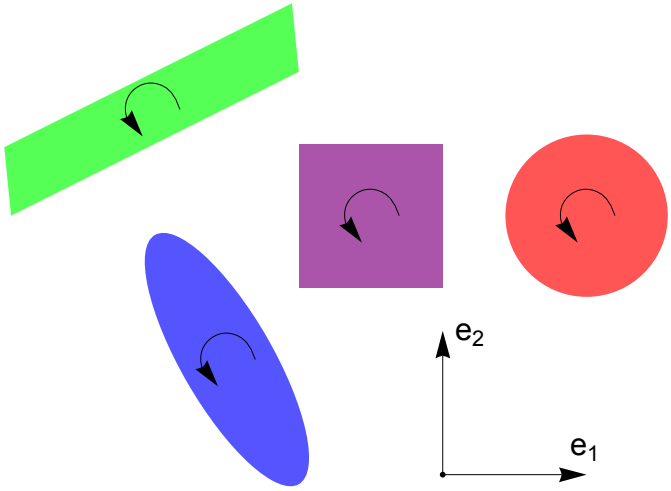
A figure that shows different shape representations of unit bivectors in R2. Includes parallelogram, square, circle and ellipse representations. Also includes inscribed arc to show the orientation of the bivectors. That was done using Arrow in combination with BSplineCurve, where the points on the curve come from evaluating CirclePoints.

```
<< peeters`;
peeters`setGitDir["../project/figures/GAelectrodynamics"]
```

```
/Users/pjoot/project/figures/GAelectrodynamics
```

```
ClearAll[e1, e2, e3]
{e1, e2, e3} = IdentityMatrix[3];

(*2D vector inputs*)
area[a_, b_] := Module[{aa, bb},
   aa = {a, 0} // Flatten;
   bb = {b, 0} // Flatten;
   Cross[aa, bb] // Norm
  ];

arc[or_, r_] := Arrow[Take[CirclePoints[or, {r, 0}, 10], 8] // BSplineCurve]
esub := Style[Subscript["e", #], FontSize → 16] &;

p = Module[{o, o2, a1, b1, o3, f1, f2, arcrad},
  {f1, f2} = IdentityMatrix[2];
  a1 = 2 {1, 1 / 2};
  b1 = -{0.2, -2};
  b1 = b1 / area[a1, b1];
  o = {0, 0};
  o2 = {2, -0.5};
  arcrad = 0.7 / 2 / Sqrt[Pi];
  o3 = {3, -1.8};

  Graphics[{
    Green // Lighter,
    Parallelogram[o, {a1, b1}],
    Purple // Lighter,
    Parallelogram[o2, {f1, f2}],
    Black,
    Point[o3],
    (*Arrow[{o, a1}],
    Arrow[{a1, a1 + b1}],*)
    Arrow[{o3, o3 + f1}],
    Arrow[{o3, o3 + f2}],
    arc[o2 + {1, 1} / 2, arcrad],
```

```
    arc[a1 / 2 + b1 / 2, arcrad],
    Red // Lighter,
    Disk[{4, 0}, 1 / Sqrt[Pi]],
    Black,
    arc[{4, 0}, arcrad],
    Blue // Lighter,
    Rotate[Disk[{1.5, -1}, {1, 1 / Pi}], 2 Pi / 3],
    Black,
    arc[{1.5, -1}, arcrad],
    Text[esub[1], o3 + f1 + 0.2 f2],
    Text[esub[2], o3 + f2 + 0.2 f1]
   }]
]
```




```
peeters`exportForLatex["bivectorRepresentationsInPlaneFig1", p]
```

```
{bivectorRepresentationsInPlaneFig1.eps, bivectorRepresentationsInPlaneFig1pn.png}
```