Pictoral addition of different size and shape bivectors.

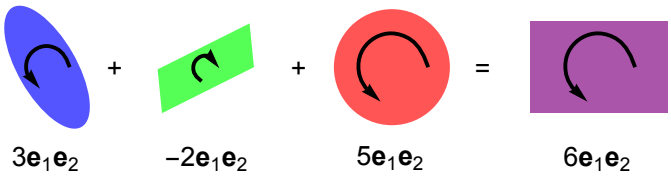
In[350]:=
```
<< peeters` ;
peeters`setGitDir[ "../project/figures/GAelectrodynamics" ]
```

Out[351]=
```
/Users/pjoot/project/figures/GAelectrodynamics
```

In[372]:=
```
ClearAll[e1, e2, e3, area, bold, b, arc, rarc, sz, esub]
{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
  ];
bold := Style[#, Bold] &;


arc[or_, r_] := Arrow[Take[CirclePoints[or, {r, 0}, 10], 8] // BSplineCurve ]
rarc[or_, r_] :=
 Arrow[Take[CirclePoints[or, {r, 0}, 10], 8] // Reverse // BSplineCurve ]
sz := Style[#, FontSize → 14] &;
esub[i_] := Subscript["e" // bold , i];
b[v_, i_, j_, p_] := Text[Row[{v // sz, esub[i] // sz, esub[j] // sz}], p]
p = Module[{o, o1, o2, o0, o3, a1, b1, f1, f2, arcrad},
  {f1, f2} = IdentityMatrix[2];
  a1 = {1, 1 / 2};
  b1 = -{0.2, -2};
  b1 = b1 / area[a1, b1];
  o = {-0, -1 / 2};
  o1 = o - 0.5 f2 ;
  o2 = {5, 0};
  arcrad = 0.7 / 2 / Sqrt[Pi];
  o0 = {-2.5, 0};
  o3 = {8, -1};

  Graphics[{
    Arrowheads[0.02],
```

```
    Blue // Lighter,
    Rotate[Disk[o0, {1.5, 2 / Pi}], 2 Pi / 3], (*1, ellipse: summand: +3 *)
    Green // Lighter,
    Parallelogram[o1, {2 a1, b1}], (*2, parallelogram: summand: -2*)
    Red // Lighter,
    Disk[o2, Sqrt[5 / Pi]], (*3, circle: summand: +5*)
    Purple // Lighter,
    Parallelogram[o3, {3 f1, 2 f2}], (*sum: rectangle: 6 *)
    Black,
    Thick,
    Arrowheads[0.03],
    arc[o0, 2.5 arcrad], (*blue ellipse*)
    rarc[o1 + 2 a1 / 2 + b1 / 2, 1.5 arcrad], (*green parallelogram*)
    arc[o2, 4 arcrad], (* red circle*)
    arc[o3 + (3 f1 + 2 f2) / 2, 4 arcrad], (*purple rectangle*)
    Text["+" // sz, {-1, 0}] ,
    Text["+" // sz, {3, 0}] ,
    Text["=" // sz, {7, 0}] ,
    b[+3, 1, 2, o0 - 2 f2],
    b[-2, 1, 2, o1 - f2 + f1],
    b[+5, 1, 2, o2 - 2 f2],
    b[+6, 1, 2, o3 - f2 + 1.5 f1]
   }]
]
```

Out[381]=




```
In[382]:= peeters`exportForLatex["bivectorAdditionInPlaneFig1", p]
Out[382]= {bivectorAdditionInPlaneFig1.eps, bivectorAdditionInPlaneFig1pn.png}
```