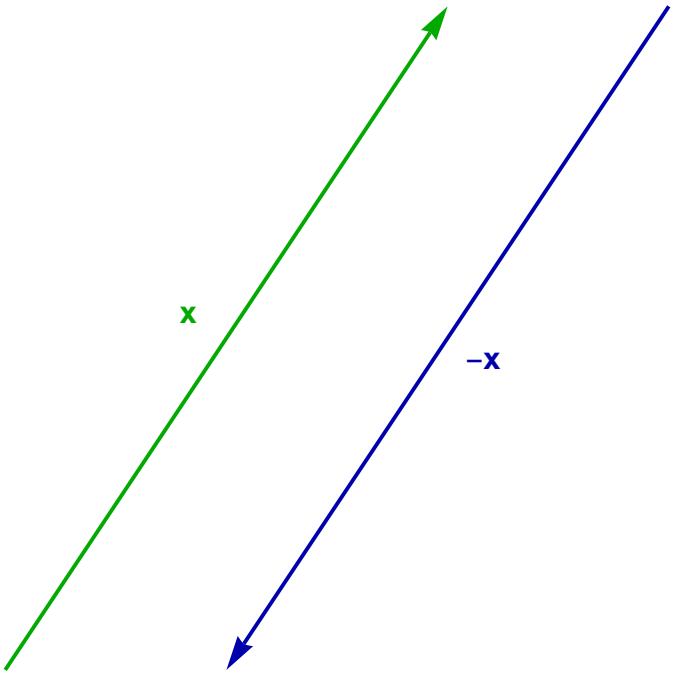
## Vector addition and vector (and scalar) sign figures: VectorsWithOppositeOrientationFig1.eps, vectorAdditionFig1.eps, scalarOrientationFig1.eps

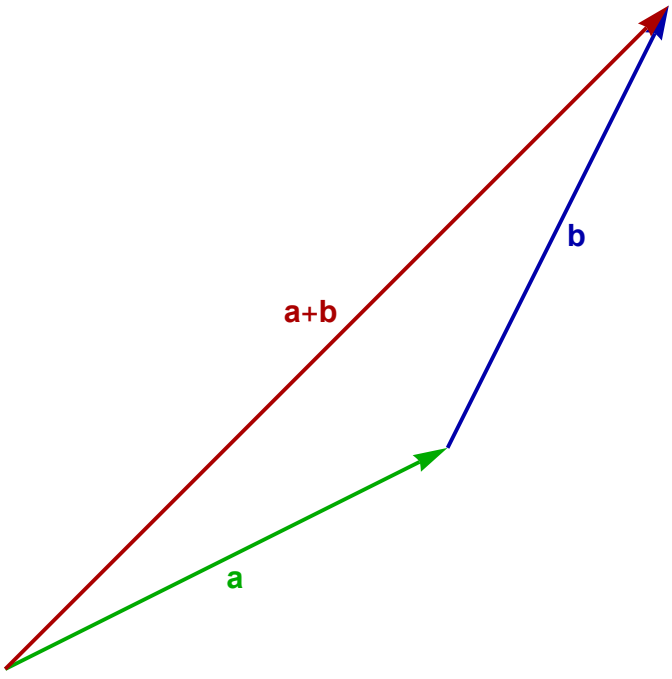
```
<< peeters` ;
peeters`setGitDir[ "../project/figures/GAelectrodynamics" ]
```

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

```
ClearAll[e1, e2, bold, fs, o]

bold = Style[ #, Bold] &;
fs := Style[ #, FontSize → 16 ] &;

(*{e1,e2,e3}= IdentityMatrix[3];*)
{e1, e2} = IdentityMatrix[2];
o = {0, 0};

ClearAll[clk, ctr, rp, rn]
ctr = RotationTransform[Pi / 2];
clk = RotationTransform[-Pi / 2];
rp = ctr[# // Normalize] &;
rn = clk[# // Normalize] &;

p1 = Module[{x0, x1, y0, y1},
  x0 = o;
  x1 = e1 + 1.5 e2;
  y0 = 1.5 e1 + 1.5 e2;
  y1 = e1 / 2;
  Graphics[ {
    Thick,
    Arrowheads[0.05],
    Green // Darker,
    Arrow[{x0, x1}],
    Text["x" // bold // fs,  (x0 + x1) / 2 + 0.1 rp[x1 - x0]],
    Blue // Darker,
    Arrow[{y0, y1} ],
    Text[Row[{"-" // fs, "x" // bold // fs}],  (y0 + y1) / 2 + 0.1 rp[y1 - y0]]
   }]
 ]
```

```
p2 = Module[{v1, v2, vs},
  v1 = e1 + 0.5 e2;
  v2 = 0.5 e1 + e2;
  vs = v1 + v2;

  Graphics[ {
    Thick,
    Arrowheads[0.05],
    Green // Darker,
    Arrow[{o, v1}],
    Text["a" // bold // fs, v1 / 2 + 0.05 rn[v1] ],
    Blue // Darker,
    Arrow[{v1, vs} ],
    Text["b" // bold // fs, v1 + v2 / 2 + 0.05 rn[v2]],
    Red // Darker,
    Arrow[{o, vs} ],
    Text[Row[{
       "a" // bold // fs,
       "+" // fs,
       "b" // bold // fs}]
     , vs / 2 + 0.08 rp[vs]]
   }]
 ]

p3 = Module[{p1, p2, r},
  r = 0.01;
  p1 = r (e1 + e2) / Sqrt[2];
  p2 = r (e1 - e2) / Sqrt[2];
  Graphics[ {
    Thick,
    Blue // Darker,
    Circle[o, r],

    Line[{-p1, p1}],
    Line[{-p2, p2}],
    Blue // Lighter,
    Disk[0.05 e1, r]
   }]
 ]
```


x
−x


a+b
b
a

```
peeters`exportForLatex["VectorsWithOppositeOrientationFig1", p1]
peeters`exportForLatex["vectorAdditionFig1", p2]
peeters`exportForLatex["scalarOrientationFig1", p3]
```

```
{VectorsWithOppositeOrientationFig1.eps, VectorsWithOppositeOrientationFig1pn.png}
```

```
{vectorAdditionFig1.eps, vectorAdditionFig1pn.png}
```

```
{scalarOrientationFig1.eps, scalarOrientationFig1pn.png}
```