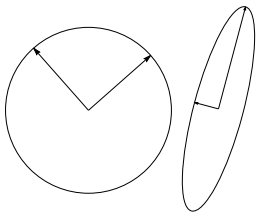
In[112]:=
```
plotVectors[A_] := Module[{u, v1, s, v},
  {u, s, v} = SingularValueDecomposition [A];
  v1 = v[[All, 1]];
  Graphics[
    {
     Circle[{0, 0}],
     Arrow[{{0, 0}, u[[All, 1]]}], Arrow[{{0, 0}, u[[All, 2]]}]
    }
   ]
   Graphics[
    {
     GeometricTransformation [Circle[{0, 0}, {s[[1, 1]], s[[2, 2]]}],
      RotationTransform [ArcTan[v1[[2]] / v1[[1]]], {0, 0}]],
     Arrow[{{0, 0}, s[[1, 1]] * v[[All, 1]]}],
     Arrow[{{0, 0}, s[[2, 2]] * v[[All, 2]]}]
    }
   ]
]
```

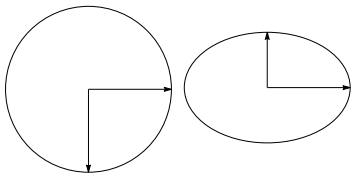
In[115]:=
```
plotVectors [{{1, 2}, {0, 2}}]
```

Out[115]=



In[116]:=
```
plotVectors [{{3, 0}, {0, -2}}]
```

Out[116]=

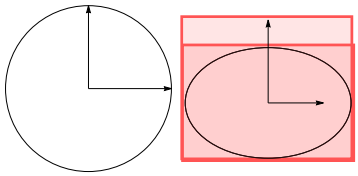


In[117]:=
```
plotVectors [{{2, 0}, {0, 3}}]
```

••• Power : Infinite expression $\frac{1}{0}$ encountered .

••• GeometricTransformation :
TransformationFunction [{{Indeterminate , Indeterminate , Indeterminate }, {≪1≫}, {Indeterminate , ≪13≫, Indeterminate }}] is not an affine transformation function .

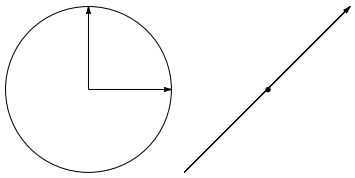
Out[117]=



This one doesn't work because ArcTan won't work for it

In[120]:=
```
plotVectors[{{1, 1}, {0, 0}}]
```

Out[120]=



In[121]:=
```
plotVectors[{{1, 1}, {1, 1}}]
```

Out[121]=