In[1]:=
```
segment = {{0 , 1}, {2 , 5}};
```

In[2]:=
$$\frac{\text{segment}[[2]] - \text{segment}[[1]]}{\sqrt{(\text{segment}[[2]] - \text{segment}[[1]]).(\text{segment}[[2]] - \text{segment}[[1]])}}$$

Out[2]=
$$\left\{\frac{1}{\sqrt{5}}, \frac{2}{\sqrt{5}}\right\}$$

In[3]:=
```
segr = Normalize[segment[[2]] - segment[[1]]]
```

Out[3]=
$$\left\{\frac{1}{\sqrt{5}}, \frac{2}{\sqrt{5}}\right\}$$

In[4]:=
```
? Cross
```

Out[4]=

Symbol

Cross[a, b] gives the vector cross product of a and b.

In[5]:=
```
segr
```

Out[5]=
$$\left\{\frac{1}{\sqrt{5}}, \frac{2}{\sqrt{5}}\right\}$$

In[6]:=
```
norm = Join[segr , {0}]×{0 , 0 , 1}
```

Out[6]=
$$\left\{\frac{2}{\sqrt{5}}, -\frac{1}{\sqrt{5}}, 0\right\}$$

In[7]:=
```
norm = Join[segr , {0}]×{0 , 0 , -1}
```

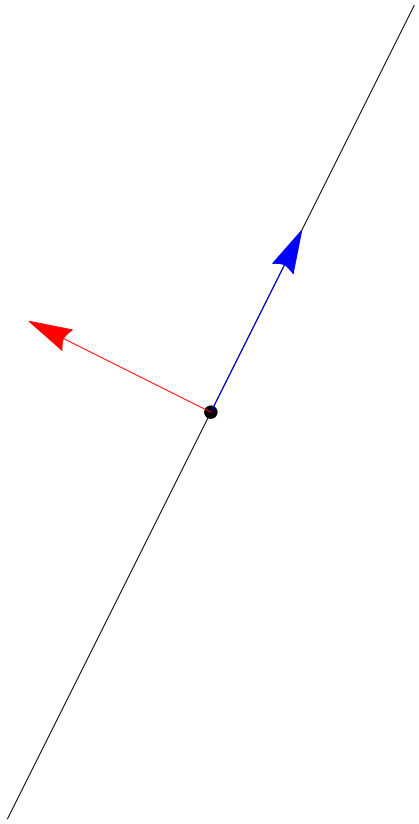
Out[7]=
$$\left\{-\frac{2}{\sqrt{5}}, \frac{1}{\sqrt{5}}, 0\right\}$$

In[8]:=
```
norm.norm
```

Out[8]=
```
1
```

In[9]:=
```
Graphics[{Line[segment],
  {PointSize[Large], Point[0.5 (segment[[1]] + segment[[2]])]}, {Blue , Arrowheads[0.1],
   Arrow[{0.5 (segment[[1]] + segment[[2]]) , 0.5 (segment[[1]] + segment[[2]]) + segr}]} ,
  {Red, Arrowheads[0.1], Arrow[{0.5 (segment[[1]] + segment[[2]]) ,
      0.5 (segment[[1]] + segment[[2]]) + norm[[1 ;; 2]]}]}}]
```

Out[9]=



In[10]:=
```
RotationMatrix[π/2] // MatrixForm
```

Out[10]//MatrixForm=

$$\begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}$$

In[11]:=
```
RotationMatrix[-π/2] // MatrixForm
```

Out[11]//MatrixForm=

$$\begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$$

In[12]:=
```
triangle = {{0 , 0 , 1} , {0 , 1 , 0} , {1 , 0 , 1}};
```

In[13]:=
```
r1 = Normalize[triangle[[2]] - triangle[[1]]]
```

Out[13]=

$$\left\{0, \frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}}\right\}$$

In[14]:= **r2 = Normalize[triangle[[3]] - triangle[[1]]]**

Out[14]= {1, 0, 0}

In[15]:= **r1.r1**

Out[15]= 1

In[16]:= **r2.r2**

Out[16]= 1

In[17]:= **norm1 = r1 × r2**

Out[17]= $\left\{0, -\frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}}\right\}$

In[18]:= **norm1.norm1**

Out[18]= 1

In[19]:= **norm2 = r2 × r1**

Out[19]= $\left\{0, \frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right\}$

In[20]:= **norm2.norm2**

Out[20]= 1

In[21]:=
```
Graphics3D[{Polygon[triangle], {Blue ,
   Arrow[{triangle[[1]] , triangle[[1]] + r1}] , Arrow[{triangle[[1]] , triangle[[1]] + r2}]},
  {Red , Arrow[{triangle[[1]] , triangle[[1]] + norm1}]}}]
```

Out[21]=