```
(%i5) load("vect");
```
(%o5) /Applications/Maxima.app/Contents/Resources/maxima/share/maxima/5.36.1/share/vector/vect.mac

```
(%i8) x: matrix([1,1]);
```
$$(\%o8)\ \begin{bmatrix} 1 & 1 \end{bmatrix}$$

```
(%i9) y: matrix([1,1]);
```
$$(\%o9)\ \begin{bmatrix} 1 & 1 \end{bmatrix}$$

```
(%i10) x . y;
```
(%o10) 2

```
(%i11) y: matrix([-1,1]);
```
$$(\%o11)\ \begin{bmatrix} -1 & 1 \end{bmatrix}$$

```
(%i12) x.y;
```
(%o12) 0

```
(%i13) x: matrix([x1,x2]);
```
$$(\%o13)\ \begin{bmatrix} x1 & x2 \end{bmatrix}$$

```
(%i14) y: matrix([y1,y2]);
```
$$(\%o14)\ \begin{bmatrix} y1 & y2 \end{bmatrix}$$

```
(%i15) x.y;
```
(%o15) $x2\,y2+x1\,y1$

```
Compute "left normal" vector to a line segment pt1 --> pt2.
The vector is actually (-deltaY, deltaX).
```

```
(%i16) deltaY: y2-y1; deltaX: x2-x1;
```
(%o16) $y2-y1$
(%o17) $x2-x1$

```
(%i18) leftNormal: matrix([-deltaY,deltaX]);
```
$$(\%o18)\ \begin{bmatrix} y1-y2 & x2-x1 \end{bmatrix}$$

```
Now compute a vector from pt1 (start of line segment) to ptt = (xt,yt) (the point under test).
This is done by simple (vector) subtraction.
```

```
(%i19) testVector: matrix([xt-x1,yt-y1]);
```
$$(\%o19)\ \begin{bmatrix} xt-x1 & yt-y1 \end{bmatrix}$$

```
Now we let Maxima simplify the dot product.
```

```
(%i20) leftNormal . testVector;
```
(%o20) $(x2-x1)(yt-y1)+(xt-x1)(y1-y2)$

```
...and we see that the totologic blog post has the signs reversed (presumably because
he had the y-axis reversed for typical computer screens).
```