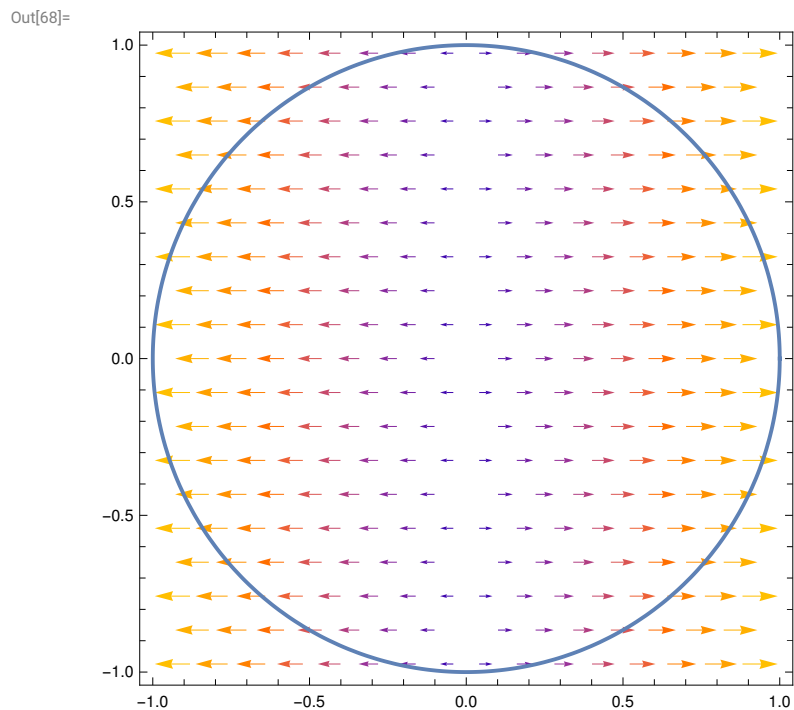


```

In[64]:= (* 2D vector field *)
F = {x, 0};
(* unit circle *)
q = {Cos[t], Sin[t]};
p1 = VectorPlot[F, {x, -1, 1}, {y, -1, 1}, VectorScaling -> True];
p2 = ParametricPlot[q, {t, 0, 2 Pi}];
Show[p1, p2]

```



```

In[49]:= (* Preliminary computation *)
Foq = F /. {x -> q[[1]], y -> q[[2]]}
qt = D[q, t]
qtperp = {qt[[2]], -qt[[1]]}

```

Out[49]=

```
{Cos[t], 0}
```

Out[50]=

```
{-Sin[t], Cos[t]}
```

Out[51]=

```
{Cos[t], Sin[t]}
```

```

In[52]:= (* line integral *)
Integrate[Dot[Foq, qt], {t, 0, 2 Pi}]

```

Out[52]=

```
0
```

```
In[53]:= (* flux integral *)
```

```
Integrate[Dot[Foq, qtperp], {t, 0, 2 Pi}]
```

```
Out[53]=
```

π