

**Vector Fields**  
*Scalar and Vector Fields*

**Question**

Determine the field lines of the following polar vector field.

$$\underline{F} = \hat{r} + \theta \hat{\theta}$$

**Answer**

The field lines satisfy  $dr = r \frac{d\theta}{\theta}$ , or  $\frac{dr}{r} = \frac{d\theta}{\theta}$ .

So the field lines are the spirals  $r = C\theta$ .