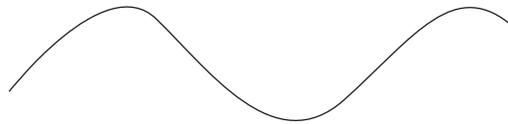


### SKETCH AND INVESTIGATE

- Q1** As you drag point  $D$ , point  $F$  moves horizontally.
- Q2** As you drag point  $E$  around the circle, point  $F$  moves vertically up and down like a sewing-machine needle.
- Q3** Answers will vary. Students might sketch a path somewhat like the curve below.
- Q4** The sketch will look something like this. Also, if students leave the animation running, they will probably get a series of curves like this that will start to fill in the area around the curve.



- Q5** The unit circle has a circumference of  $2\pi$ , about 6.28 grid units.
- Q6** For the trace to repeat itself without tracing a new curve, the length of  $\overline{AB}$  must be an integer multiple of the circumference of the circle. The circumference of the circle is  $2\pi$ , about 6.28 grid units, so the  $x$ -coordinate of point  $B$  should be about 6.28.