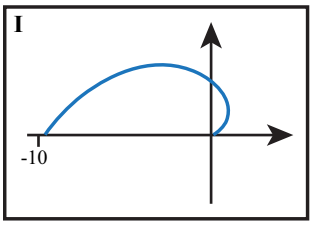
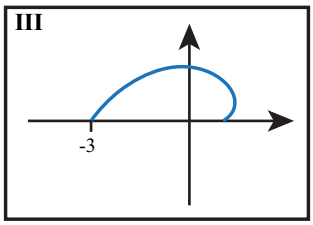
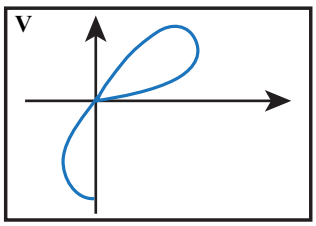
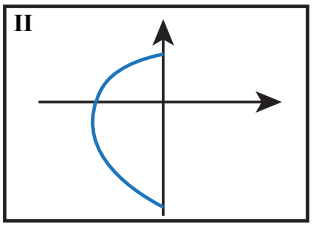
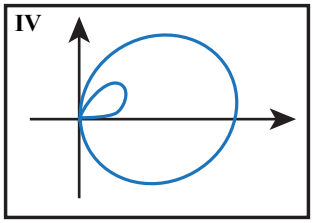
Polar Functions Worksheet - Answer Key

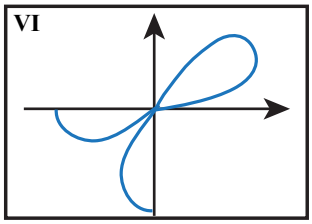












1. Translate $x^2 - 2x + y^2 = 6$ into a polar function.
   $r^2 = 2r\cos(\theta) + 6$

2. Translate $r^2\cos(2\theta) = a^2$ into a rectangular equation.
   $x^2 - y^2 = a^2$

3. Sketch the function $r = \theta^2$, for $0 \leq \theta \leq \pi$ in frame **I**.

4. Sketch the function $r = \theta + \cos(\theta)$, for $\frac{\pi}{2} \leq \theta \leq \frac{3\pi}{2}$ in frame **II**.

5. Sketch the function $r = \theta - \sin(\theta)$, for $0 \leq \theta \leq \pi$ in frame **III**.

6. Translate $y = x + 2x^2$ into a polar function.
   $r = 0$, $\cos(\theta) = 0$ or $r = \frac{1}{2}(1 - \tan(\theta))$

7. Translate $\theta - r\cos(\theta) = 0$ into a rectangular equation.
   $y = x\tan(x)$

8. Sketch the function $r = \theta\cos(\theta)$, for $0 \leq \theta \leq \frac{3\pi}{2}$ in frame **IV**.

9. Sketch the function $r = \sin(3\theta)$, for $0 \leq \theta \leq \frac{\pi}{2}$ in frame **V**.

10. Sketch the function $r = \cos(4\theta)$, for $\pi \leq \theta \leq \frac{3\pi}{2}$ in frame **VI**.
