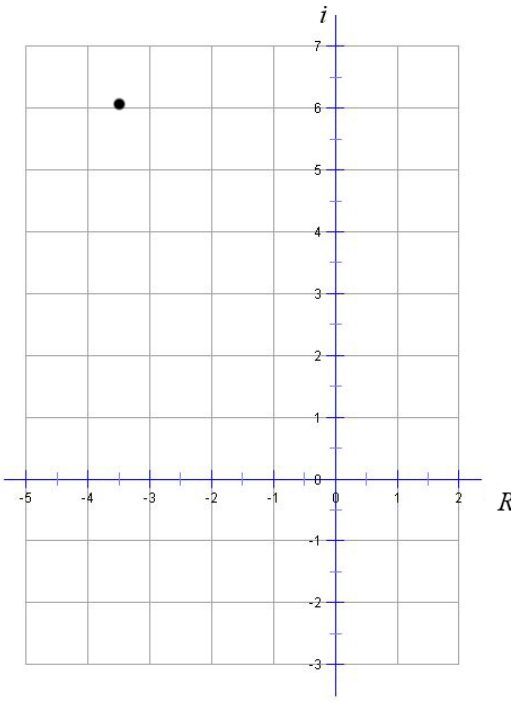
Pre-Calculus Homework #19 – Answer Key

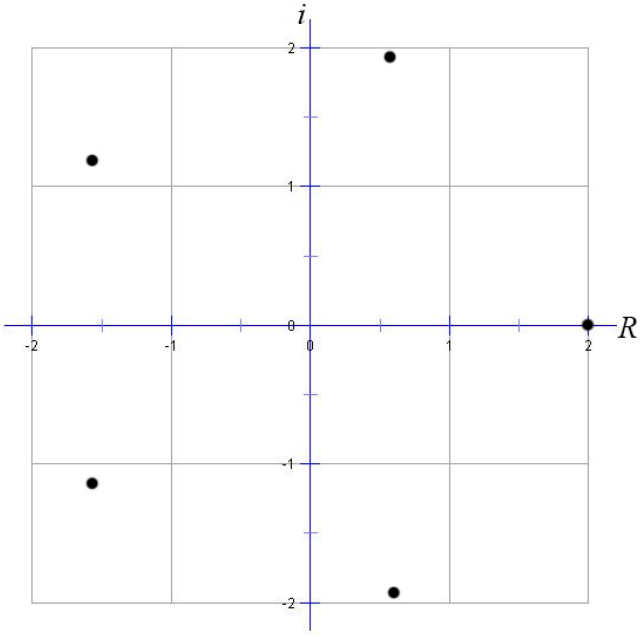
1) $\left|\frac{-7}{2}+\frac{7\sqrt{3}}{2}i\right|=7$ Polar form = $7(\cos 120^\circ + i\sin 120^\circ)$



2) $\frac{3}{2}(\cos 210^\circ + i\sin 210^\circ)$ which gives you $\frac{-3\sqrt{3}}{4}-\frac{3i}{4}$

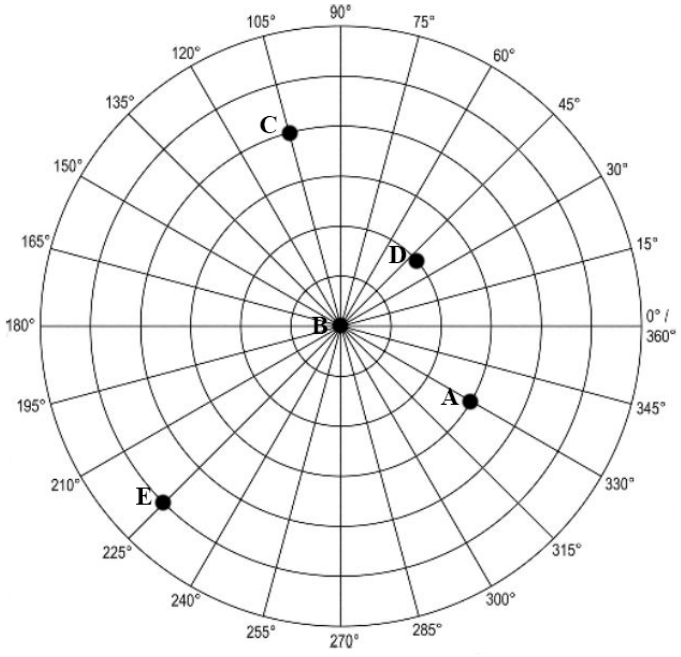
3) $\frac{\sqrt{2}-\sqrt{2}i}{2}$

4) $2(\cos 0^\circ + i\sin 0^\circ)$, $2(\cos 72^\circ + i\sin 72^\circ)$, $2(\cos 144^\circ + i\sin 144^\circ)$,
$2(\cos 216^\circ + i\sin 216^\circ)$, $2(\cos 288^\circ + i\sin 288^\circ)$



5) $x=\frac{3}{2}+\frac{3\sqrt{3}}{2}i,\quad x=\frac{3}{2}-\frac{3\sqrt{3}}{2}i,\quad x=\frac{-3}{2}+\frac{3\sqrt{3}}{2}i,\quad x=\frac{-3}{2}-\frac{3\sqrt{3}}{2}i,\quad x=3+0i,\quad x=-3+0i$

6)



7) $(3, 315^\circ)$ $(3, \frac{7\pi}{4})$

8) $(\frac{3}{2}, \frac{-3\sqrt{3}}{2})$

9) $(5, 240^\circ)$ $(5, \frac{4\pi}{3})$

10) $(-\sqrt{6}-\sqrt{2}, -\sqrt{6}+\sqrt{2})$ or $(-2\sqrt{2+\sqrt{3}}, -2\sqrt{2-\sqrt{3}})$

11) $r^2(\cos^2\theta - 4\sin^2\theta) = 4$ or $r^2(1-5\sin^2\theta) = 4$

12) $x^2 + y^2 = 49$

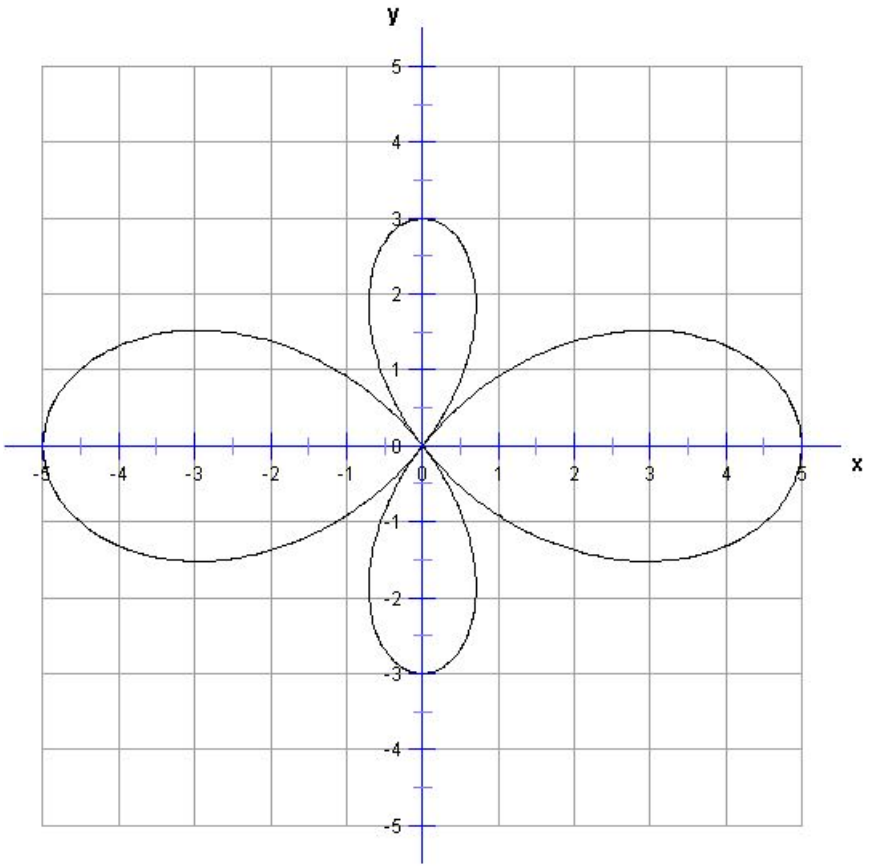
13) $r^2 = 8r\sin\theta$

14) $x^2 + y^2 = -3x$

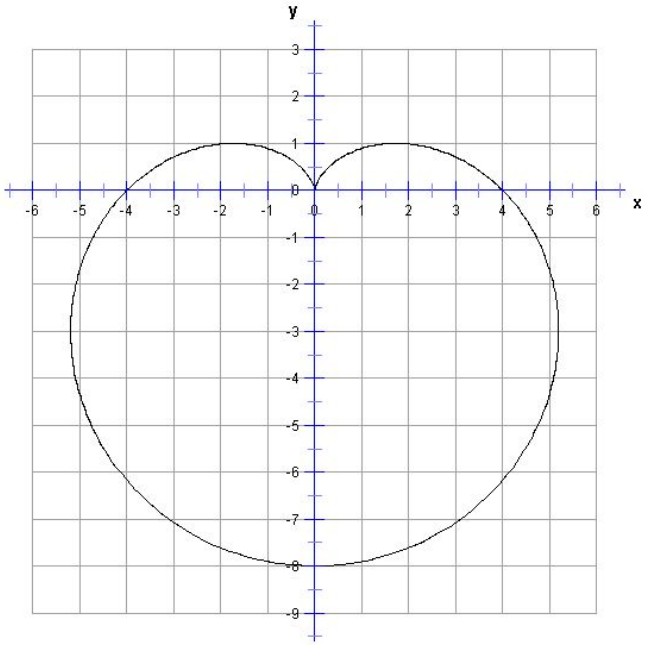
15) $r^3\cos^2\theta\sin\theta = -8$

16) $x^2 + y^2 = x - y$

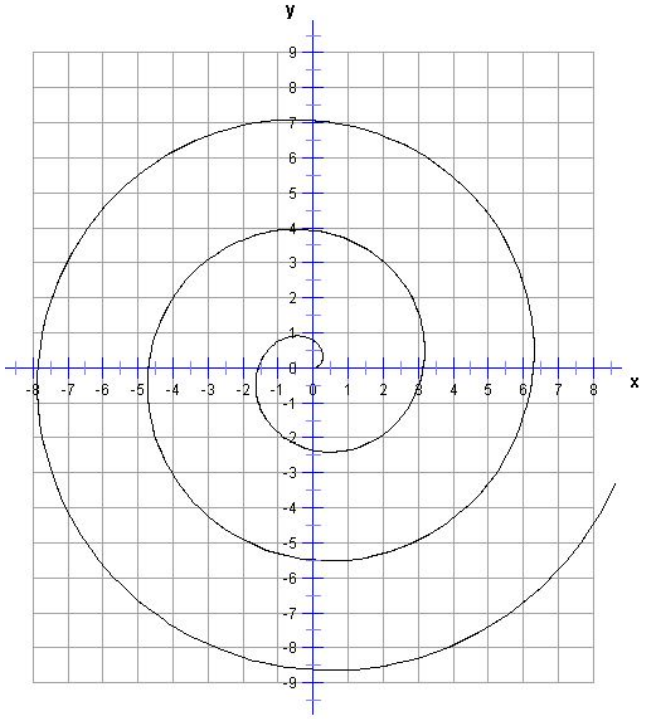
17) $r = 1 + 4\cos 2\theta$



18) $r = 4 - 4\sin\theta$



19) $r = \frac{\theta}{2}$



20) $r = 6 - 5\cos 5\theta$