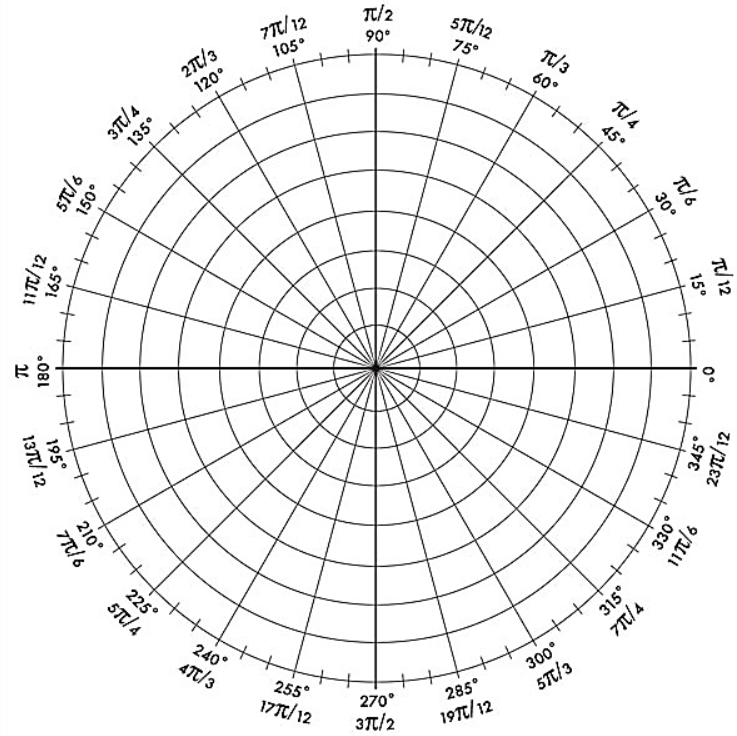
Plot the polar coordinates. Label each point.



1. $A(3,\frac{\pi}{6})$

2. $B(5,240°)$

3. $C(1,135°)$

4. $D(2,-\frac{\pi}{3})$

5. $E(-2,\frac{\pi}{4})$

6. $F(-4,\frac{5\pi}{3})$

7. $G(-5,-\frac{\pi}{4})$

8. $H(-2,0°)$

9. I(0, –270°)

State three other pairs of polar coordinates for each point where $-360° < \theta < 360°$. Show work.

10. (-2, 150)

11. (5, -60)

State three other pairs of polar coordinates for each point where $-2\pi < \theta < 2\pi$. Show work.

12. $(4,\frac{\pi}{6})$

13. $(-3,\frac{2\pi}{3})$

A point in polar coordinates is given. Convert the point to rectangular coordinates. Show work.

14. $(3,\frac{\pi}{2})$

15. $(-1,\frac{5\pi}{4})$

16. $(2,\frac{7\pi}{6})$

17. (–2.5, 1.1) Use a calculator.

A point in rectangular coordinates is given. Convert the point to polar coordinates with $r > 0$ and $0 < \theta < 2\pi$. Show work.

18. (–3, –3)

19. (–6, 0)

20. $(4,-4\sqrt{3})$

21. (–3, 4)

Convert the rectangular equation to polar form.

22. $x^2 + y^2 = 9$

23. y = 3

24. y = x

Convert each polar equation to rectangular form.

25. r = -5secΘ

26. r = 4sinΘ

27. r = 4

Change the polar coordinates (r, θ) to rectangular coordinates (x, y).

1) (4, 45°)

2) (–6, π/2)

3) (9, –π/3)

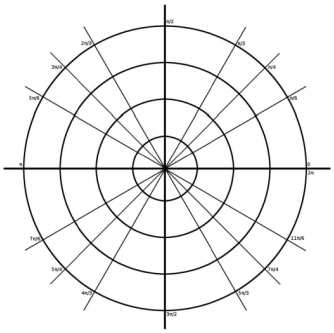
For the point given in rectangular coordinates, find equivalent polar coordinates (r, θ) for r > 0 and 0° ≤ θ < 360°.

4) ($3\sqrt{3}$, 3)

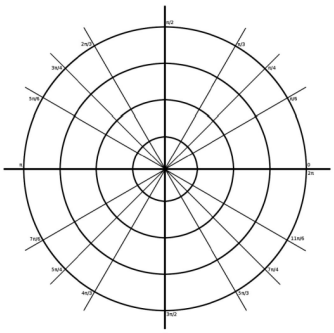
5) (–6, $6\sqrt{3}$)

Graph the polar equation.

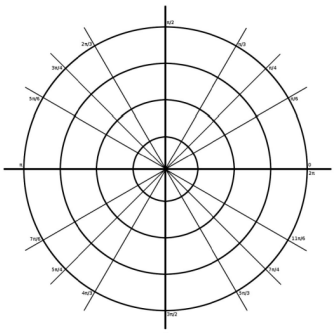
6) r sin θ = 1



7) r = 4 sin θ



8) r = 6 sin 2θ



Write the equation in polar form.

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

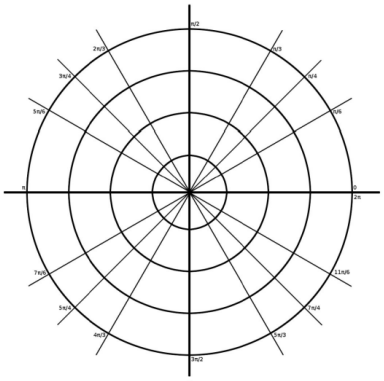
10) x = -9

Write the polar equation in terms of x and y.

11) $r = \dfrac{5}{5\cos\theta + 6\sin\theta}$

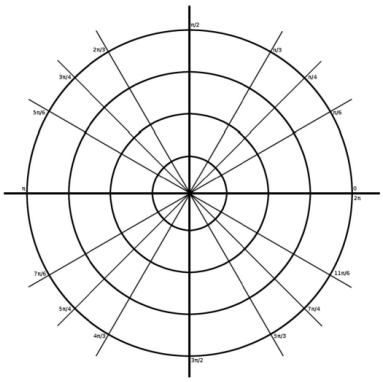
Graph the polar equation.

12) r = 6 + 6 sin θ (cardioid)

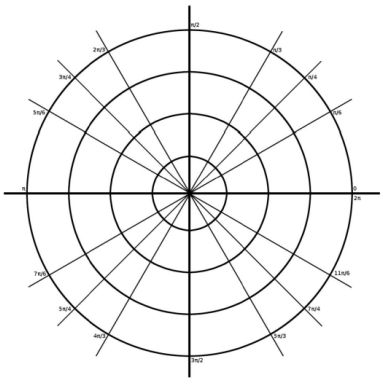


Complete #89 – 97 odd from page 802 of your text book.

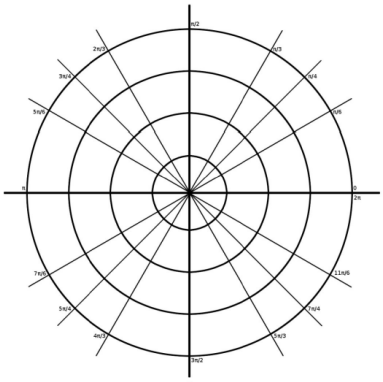
89.



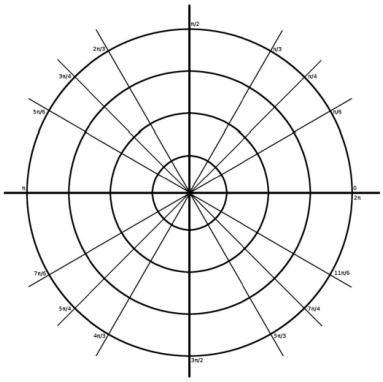
91.



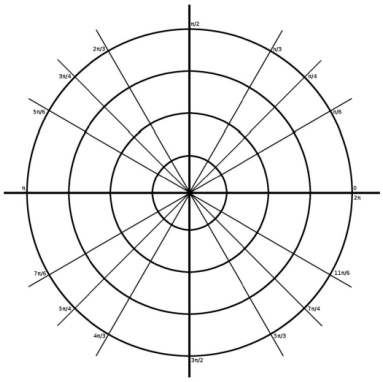
93.



95.



97.



Key Part A:

1 – 9 will be shown in class.

10. (–2, –210), (2, –30), (2, 330)

11. (5, 300), (–5, 120), (–5, –240)

12. $(4, -\frac{11\pi}{6})$, $(-4, \frac{7\pi}{6})$, $(-4, -\frac{5\pi}{6})$

13. $(3, -\frac{\pi}{3})$, $(3, \frac{5\pi}{3})$, $(-3, -\frac{4\pi}{3})$

14. (0, 3)

15. $(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2})$

16. $(-\sqrt{3}, -1)$

17. (-1.1, -2.2)

18. $\left(3\sqrt{2}, \frac{5\pi}{4}\right)$

19. (6, π)

20. $\left(8, \frac{5\pi}{3}\right)$

21. $(5, 5.3559)$

22. r = 3

23. r = 3cscΘ

24. $\Theta = \frac{\pi}{4}$

25. x = – 5

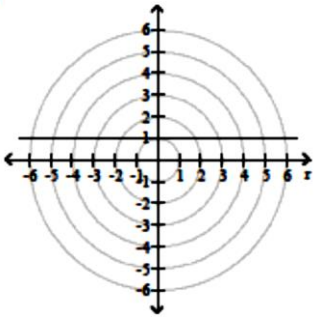
26. $x^2 + y^2 = 4y$

27. $x^2 + y^2 = 16$

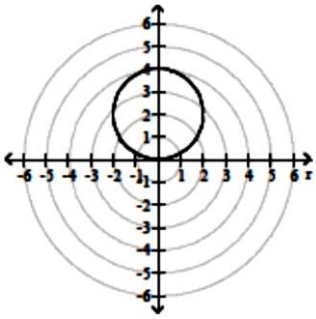
Key Part B:

1) $(2\sqrt{2}, 2\sqrt{2})$
2) **(0, -6)**
3) $\left(\frac{9}{2}, \frac{-9\sqrt{3}}{2}\right)$
4) $(6, 30°)$
5) $(12, 120°)$
9) $r = -3\cos\theta$
10) $r = -9\sec\theta$
11) $5x + 6y = 5$

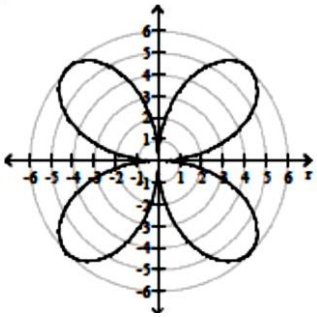
6)



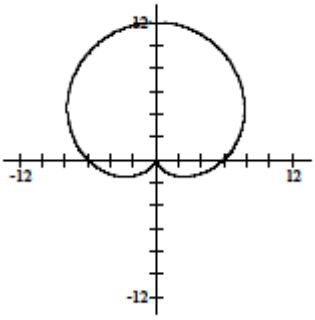
7)



8)



12)



Key Part C:

All odd answers are in the back of your text book.