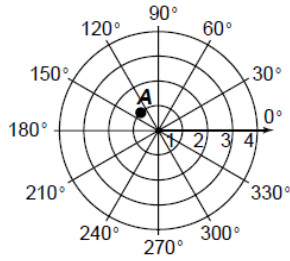


Chapter 9 Solutions

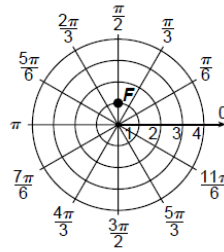
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Section 9.1

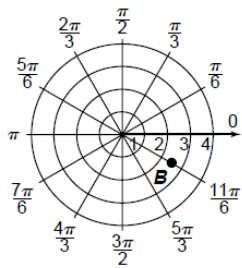
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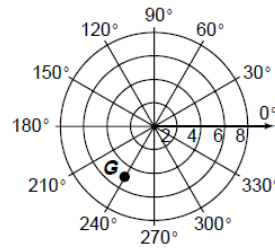
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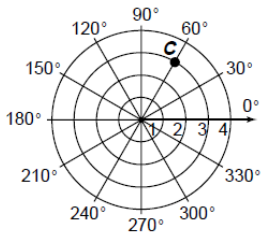
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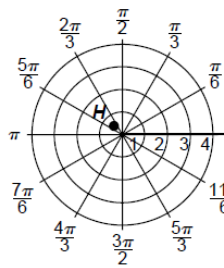
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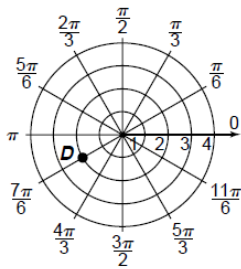
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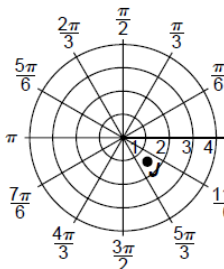
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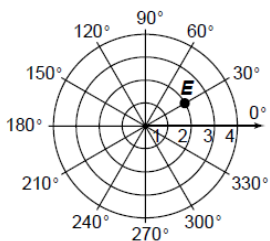
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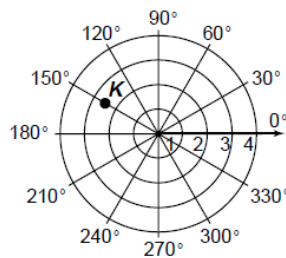
20.



16.



21.

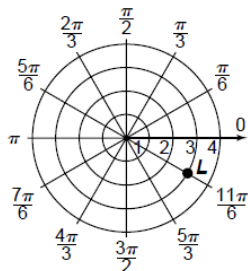


Chapter 9 Solutions

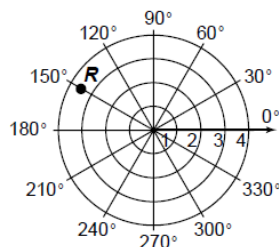
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Section 9.1 – continued

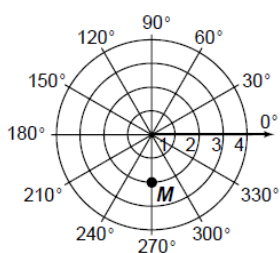
22.



27.



23.



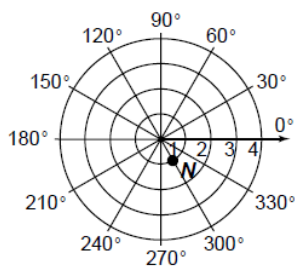
28. Example: $(2, \frac{\pi}{3})$; $(2, \frac{7\pi}{3})$; $(-2, 240^\circ)$; $(-2, 600^\circ)$

29. $(1.5, 540^\circ)$; $(1.5, 900^\circ)$; $(-1.5, 0^\circ)$; $(-1.5, 360^\circ)$

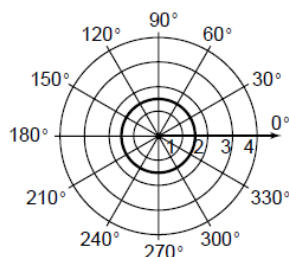
30. $(-1, \frac{7\pi}{3})$; $(-1, \frac{13\pi}{3})$; $(1, \frac{4\pi}{3})$; $(1, \frac{10\pi}{3})$

31. $(4, 675^\circ)$; $(4, 1035^\circ)$; $(-4, 135^\circ)$; $(-4, 495^\circ)$

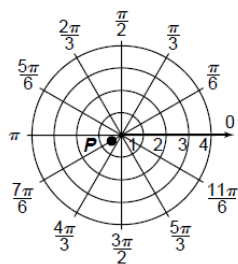
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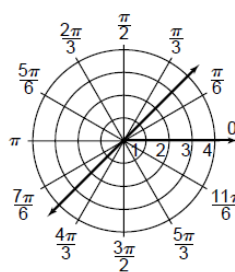
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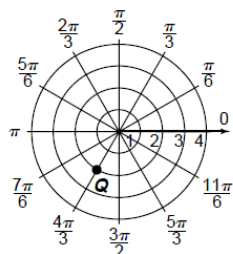
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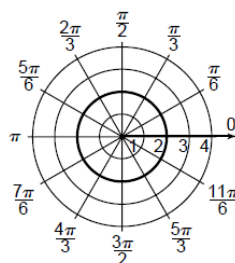
33.



26.



34.

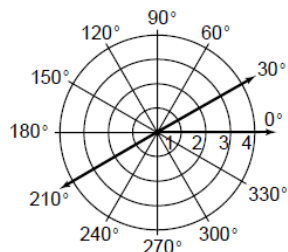


Chapter 9 Solutions

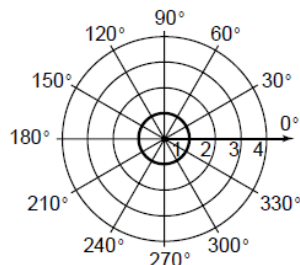
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Section 9.1 – Continued

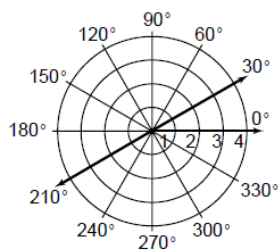
35.



40.



36.



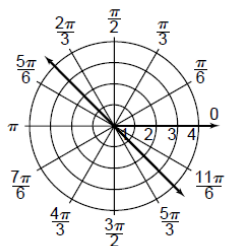
42. About 5.63

43. About 5.35

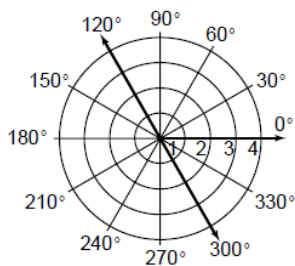
44. About 3.16

45. About 4.87

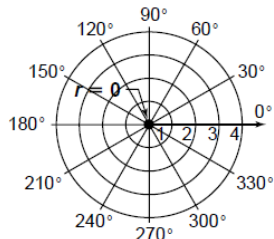
37.



38.



39.

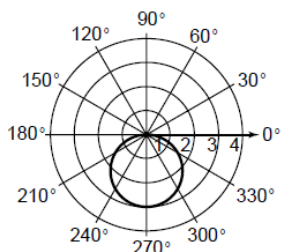


Chapter 9 Solutions

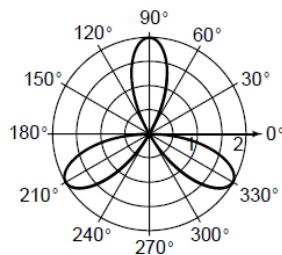
These answers are to be used to check against your solutions. Your homework should show all of your work, not just the answers!

Section 9.2

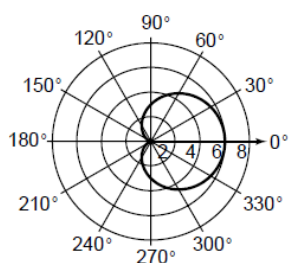
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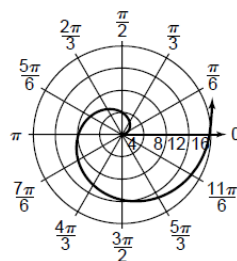
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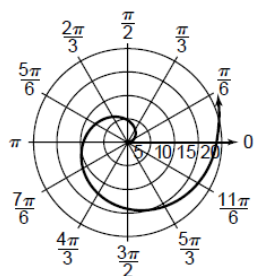
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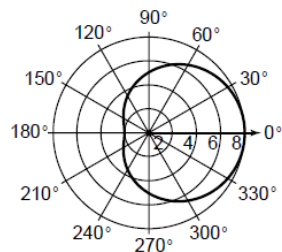
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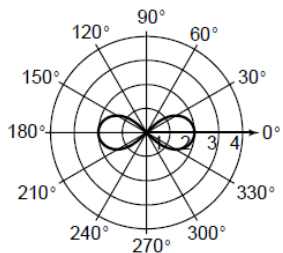
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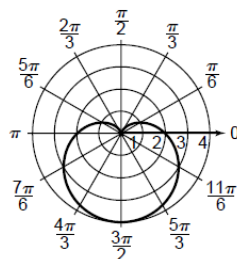
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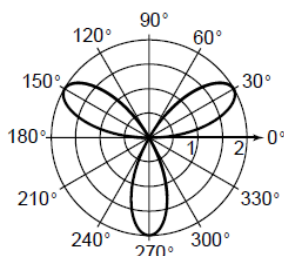
14.



19.



15.



25. $(3, 0)$

26. $(1, \frac{\pi}{2}); (1, \frac{3\pi}{2})$

27. $(0, 0); (0, \pi); (\sqrt{3}, \frac{\pi}{3}); (-\sqrt{3}, \frac{5\pi}{3})$

38. $(4, 405^\circ); (4, 765^\circ); (-4, -135^\circ); (-4, 225^\circ)$

Chapter 9 Solutions

These answers are to be used to check against your solutions. Your homework should show all of your work, not just the answers!

Section 9.3

14. $(2\sqrt{2}, \frac{7\pi}{3})$

15. $(1, \frac{\pi}{2})$

16. $(2, \frac{\pi}{3})$

17. $(\frac{1}{2}, \frac{4\pi}{3})$

18. $(\sqrt{73}, 1.21)$

19. $(\sqrt{65}, 5.23)$

20. $(0, 3)$

21. $(-\frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4})$

22. $(-\frac{\sqrt{3}}{2}, \frac{1}{2})$

23. $(0, 2)$

24. $(-2\sqrt{3}, -2)$

25. $(-9.00, 10.72)$

26. $r = -7\sec\theta$

27. $r = 5\csc\theta$

28. $r = \pm 5$

29. $r = 2\sin\theta$

30. $r^2 = \sec 2\theta$

31. $r = 4\sin\theta$

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

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

34. $y = \sqrt{3}x$

35. $y = 2$

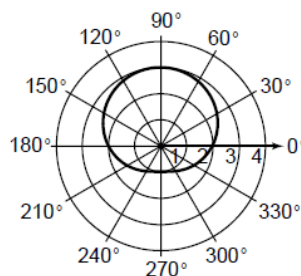
36. $x^2 + y^2 = 3x$

37. $xy = 4$

38. $\theta = \frac{\pi}{4}$

39. $x^2 + y^2 = y$

46.



47. $(-2, 405^\circ); (-2, 765^\circ); (2, 225^\circ); (2, 585^\circ)$

Chapter 9 Solutions

These answers are to be used to check against your solutions. Your homework should show all of your work, not just the answers!

Section 9.5

5. -1

6. -2

7. $-4 + 4i$

8. $3.5 + 10.4i$

9. $1 + 9i$

10. $3 + 4i$

11. $\frac{2}{5} + \frac{1}{5}i$

13. -1

14. $-i$

15. 1

16. 0

17. $-1 + 8i$

18. $9 - 7i$

19. $-\frac{3}{2} + 2i$

20. $-7 + 4i$

21. $5 + 10i$

22. $-15 + 8i$

23. $-2 + \sqrt{35} - 2i\sqrt{7} - i\sqrt{5}$

24. $-8 + 3i\sqrt{3}$

26. $-\frac{10}{17} + \frac{11}{17}i$

27. $\frac{12}{13} - \frac{5}{13}i$

28. $x^2 + 1 = 0$

29. $x^2 - 4x + 5 = 0$

30. $12 - 31i$

31. $-12 - 31i$

32. $\frac{1}{6} - \frac{\sqrt{6}}{3} + \frac{\sqrt{3}}{3}i + \frac{\sqrt{2}}{6}i$

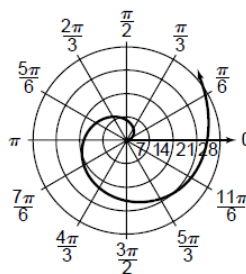
33. $\frac{2}{5} - \frac{2\sqrt{3}}{15} - \frac{\sqrt{2}}{5}i - \frac{2\sqrt{6}}{15}i$

34. $\frac{13}{25} - \frac{9}{25}i$

35. $\frac{-24+10i}{169}$

40. $\frac{-11+2i}{125}$

43.



25. $\frac{4}{5} - \frac{3}{5}i$

Chapter 9 Solutions

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Section 9.6

8. $2\sqrt{2}cis\frac{7\pi}{4}$

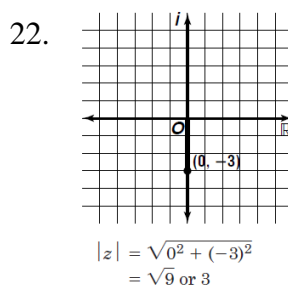
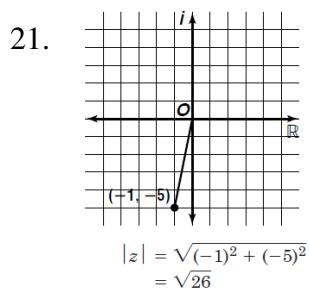
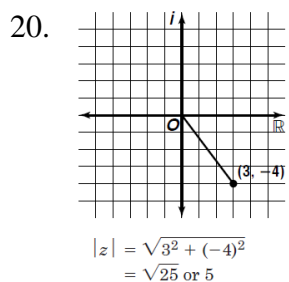
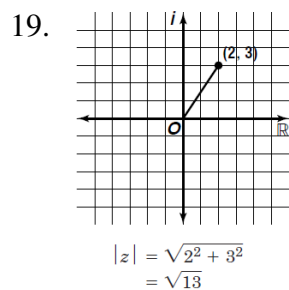
9. $\sqrt{41}cis(0.90)$

10. $2cis(\pi)$

16. $x = 6; y = -3$

17. $x = \frac{1}{2}; y = 1$

18. $x = -4; y = 8$



26. $3\sqrt{2}cis\left(\frac{\pi}{4}\right)$

27. $2cis\left(\frac{4\pi}{3}\right)$

28. $10cis(5.36)$

29. $\sqrt{17}cis(2.90)$

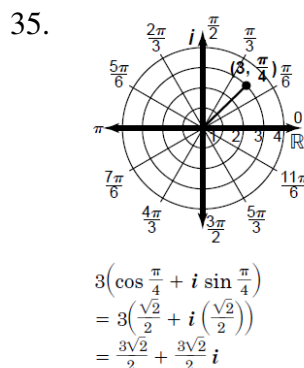
30. $29cis(5.47)$

31. $2\sqrt{5}cis(2.03)$

32. $3cis(0)$

33. $4\sqrt{2}cis(\pi)$

34. $2cis\left(\frac{3\pi}{2}\right)$

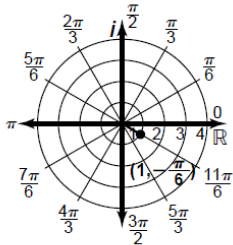


Chapter 9 Solutions

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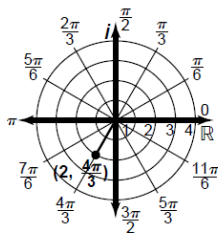
Section 9.6 – Continued

36.



$$\begin{aligned} & \cos\left(-\frac{\pi}{6}\right) + i \sin\left(-\frac{\pi}{6}\right) \\ &= \frac{\sqrt{3}}{2} - \frac{1}{2}i \end{aligned}$$

37.



$$\begin{aligned} & 2\left(\cos\frac{4\pi}{3} + i \sin\frac{4\pi}{3}\right) \\ &= 2\left(-\frac{1}{2} - i\left(\frac{\sqrt{3}}{2}\right)\right) \\ &= -1 - \sqrt{3}i \end{aligned}$$

51. $-6 + 22i$

52. $\left(\frac{3\sqrt{2}}{2}, \frac{3\sqrt{2}}{2}\right)$

Chapter 9 Solutions

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Section 9.7

10. -28

12. $\frac{\sqrt{3}}{12} + \frac{1}{12}i$

14. $18i$

16. $3 - 3i\sqrt{3}$

18. $1.46 + 0.32i$

20. $-\frac{4}{3}i$

22. $6\sqrt{3} + 6i$

23. $-4 - 4i\sqrt{3}$

24. $12i$

25. -12

26. $\frac{\sqrt{3}+i}{4}$

27. $\frac{2\sqrt{2}}{3}i$

33. $13cis(5.11)$

Chapter 9 Solutions

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Section 9.8

12. $27i$

13. $-16\sqrt{2} - 16i\sqrt{2}$

14. $16 + 16i$

15. $-8 - 8i\sqrt{3}$

16. $-567 + 1944i$

17. $-0.03 - 0.07i$

18. $-112 - 384i$

19. $1.83 + 0.81i$

20. $0.71 + 0.71i$

21. $0.96 + 0.76i$

22. $1.60 - 0.13i$

23. $1.37 + 0.37i$

24. $0.91 - 0.61i$

25. $0.71 + 0.71i$

40. $3\sqrt{3} - 3i$

41. $5 - i$