

Answers to Section 9.1

- 12.) B
14.) C
16.) D
18.) D
20.) [GRAPH]
24.) [GRAPH]
26.) [GRAPH]
30.) [GRAPH]
- 32.) [GRAPH]; $\left(4, -\frac{5\pi}{4}\right), \left(-4, \frac{7\pi}{4}\right), \left(4, \frac{11\pi}{4}\right)$
- 40.) $(0, -4)$
- 44.) $\left(\frac{5}{2}, -\frac{5\sqrt{3}}{2}\right)$
- 46.) $(1, -\sqrt{3})$
- 56.) $\left(2, \frac{\pi}{2}\right)$
- 60.) $\left(3\sqrt{2}, \frac{3\pi}{4}\right)$
- 62.) $\left(4, -\frac{2\pi}{3}\right)$
- 68.) $r = \cos \theta$
- 70.) $r^2 \sin^2 \theta - 2r \cos \theta = 0$
- 72.) $4r^3 \cos^2 \theta \sin \theta = 1$
- 76.) $x^2 + y^2 = y + \sqrt{x^2 + y^2}$
- 78.) $x^2 + x + y^2 - y = 0$
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Answers to Section 9.2

- 14.) $x^2 + y^2 = 4$; a circle of radius 2 centered at the origin; [GRAPH]
- 16.) $y = -x$; a line passing through the origin at an angle of -45° ; [GRAPH]
- 18.) $x = 4$; a vertical line passing through 4 on the x -axis; [GRAPH]
- 20.) $y = -2$; a horizontal line passing through -2 on the y -axis; [GRAPH]
- 22.) $x^2 + (y - 1)^2 = 1$; a circle of radius 1 centered at $(0, 1)$; [GRAPH]

- 28.) $(x+2)^2 + y^2 = 4$; a circle of radius 2 centered at $(-2, 0)$; [GRAPH]
*** For 29-36 you must show your polar-to-rectangular conversion work for credit!!**
- 29.) E
 30.) A
 31.) F
 32.) B
 33.) H
 34.) G
 35.) D
 36.) C
- 44.) cardioid [GRAPH on POLAR PAPER]
 52.) limaçon with an inner loop [GRAPH on POLAR PAPER]
 54.) limaçon with an inner loop [GRAPH on POLAR PAPER]
 56.) rose with three petals [GRAPH on POLAR PAPER]
 60.) lemniscate [GRAPH on POLAR PAPER]
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Answers to Section 9.3

- 12.) $\sqrt{2}(\cos(135^\circ) + i \sin(135^\circ))$
 14.) $2(\cos(300^\circ) + i \sin(300^\circ))$
 18.) $18(\cos(30^\circ) + i \sin(30^\circ))$
 24.) $-\frac{3\sqrt{3}}{2} - \frac{3}{2}i$
 28.) $4i$
 34.) $zw = \cos(220^\circ) + i \sin(220^\circ)$, $z/w = \cos(20^\circ) + i \sin(20^\circ)$
 36.) $zw = 12(\cos(280^\circ) + i \sin(280^\circ))$, $z/w = \frac{1}{3}(\cos(240^\circ) + i \sin(240^\circ))$
 42.) $-\frac{27}{2} - \frac{27\sqrt{3}}{2}i$
 46.) $1/32$
 48.) $\frac{27}{2} - \frac{27\sqrt{3}}{2}i$
 50.) -64
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Section 9.4 answers

- 8.) [graph]
10.) [graph]
12.) [graph]
16.) False: $K+G = -F$
18.) True
28.) $\mathbf{v} = 9\mathbf{i} + 3\mathbf{j}$
32.) $\mathbf{v} = \mathbf{i} + \mathbf{j}$
34.) 13
40.) $13\mathbf{i} - 21\mathbf{j}$
48.) $-\frac{5}{13}\mathbf{i} + \frac{12}{13}\mathbf{j}$
58.) $-\frac{3}{2}\mathbf{i} - \frac{3\sqrt{3}}{2}\mathbf{j}$
64.) 82.99 N in a direction of 99.56°
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Section 9.5 answers

- 8.) [a] 0; [b] 90° ; [c] orthogonal
10.) [a] 6; [b] 18.43° ; [c] neither
12.) [a] $1 - \sqrt{3}$; [b] 105° ; [c] neither
14.) [a] 24; [b] 16.26° ; [c] neither
16.) [a] 0; [b] 90° ; [c] orthogonal