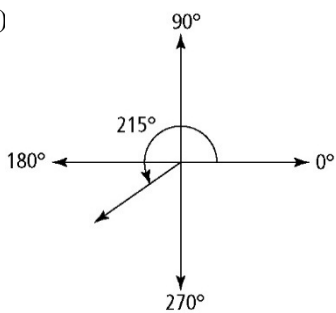


Chapter 4 BLM Answers

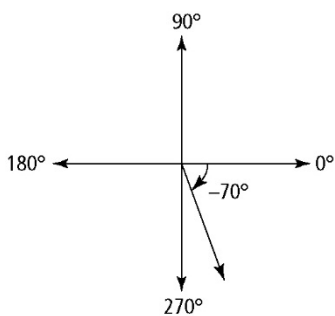
BLM 4-2 Section 4.1 Extra Practice

1. a)



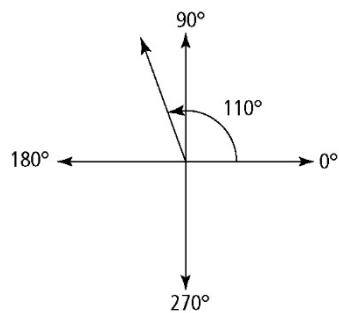
quadrant III

b)



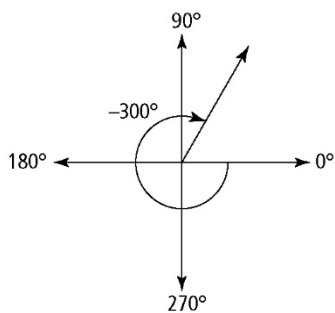
quadrant IV

c)



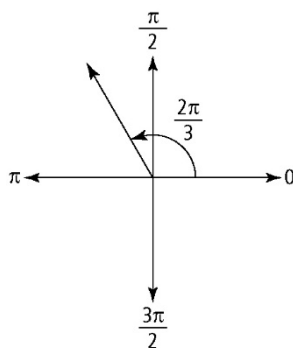
quadrant II

d)



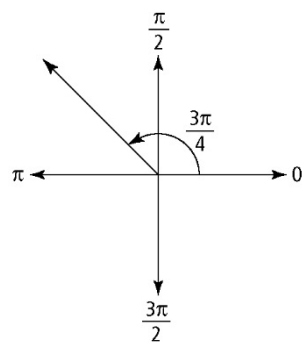
quadrant I

2. a)



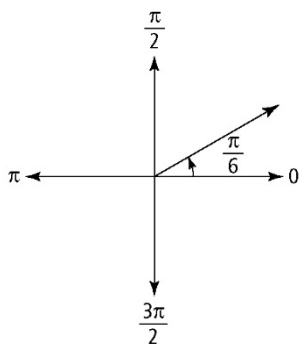
quadrant II

b)



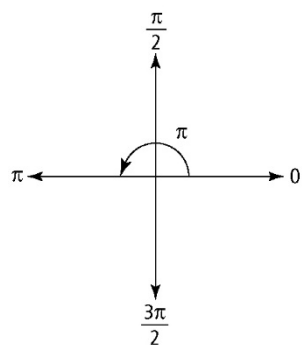
quadrant II

c)



quadrant I

d)



no quadrant



3. a) $\frac{5\pi}{6}$, 2.62 b) $\frac{4\pi}{3}$, 4.19
 c) $\frac{\pi}{4}$, 0.79 d) $\frac{31\pi}{18}$, 5.41
 4. a) 144° b) 150° c) 123.75° d) -315°
 5. a) 183° b) 229° c) 344° d) -143°
 6. a) 810° , 1170° b) $\frac{11\pi}{5}$, $\frac{21\pi}{5}$ c) 7.98, 14.27

7. a) subtract 360°
 b) subtract 2π , and use fractions to determine the exact value
 c) subtract 2π using your calculator, and then round your answer to the required accuracy

8. a) $75^\circ \pm (360^\circ)n$, where n is a natural number
 b) $\left(\frac{\pi}{3} \pm 2\pi n\right)$ radians, where n is a natural number

- c) $(1 \pm 2\pi n)$ radians, where n is a natural number

9. 20.9 cm

10. 1.43 radians

BLM 4-3 Section 4.2 Extra Practice

1. a) $x^2 + y^2 = 16$ b) $x^2 + y^2 = 5$
 c) $x^2 + y^2 = 82.81$ d) $x^2 + y^2 = 121$

2. $\left(-\frac{5}{13}, \frac{12}{13}\right)$ and $\left(-\frac{2}{3}, -\frac{\sqrt{5}}{3}\right)$; When the

coordinates are substituted into $x^2 + y^2 = 1$, the LHS equals the RHS.

3. a) $\left(-\frac{2}{3}, -\frac{\sqrt{5}}{3}\right)$ b) $\left(-\frac{3}{5}, \frac{4}{5}\right)$

- c) $\left(\frac{5}{6}, -\frac{\sqrt{11}}{6}\right)$ d) $\left(\frac{4\sqrt{3}}{7}, \frac{1}{7}\right)$

4. a) $\left(\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right)$ b) $(0, -1)$

- c) $\left(\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$ d) $\left(-\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

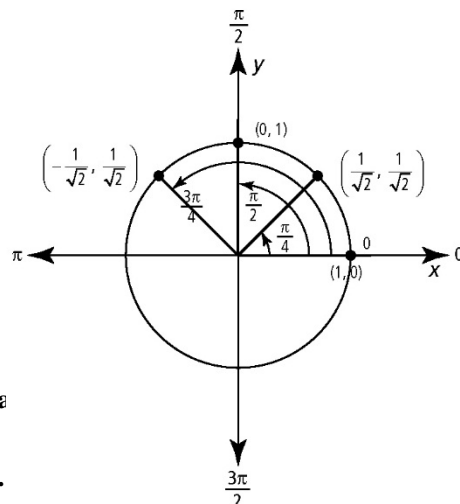
5. a) $\left(-\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right)$ b) $\left(-\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$

- c) $(1, 0)$ d) $\left(\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

6. a) 225° b) 180° c) 315° d) 240°

7. a) 0π b) $\frac{5\pi}{3}$ c) $\frac{5\pi}{6}$ d) π

8.



9. a

10.

BLM 4-5 Section 4.3 Extra Practice

1. a) $\frac{1}{2}$ b) $-\frac{1}{2}$ c) -1 d) -1 e) $\frac{2}{\sqrt{3}}$ or $\frac{2\sqrt{3}}{3}$ f) -1

2. a) $\frac{1}{\sqrt{3}}$ or $\frac{\sqrt{3}}{3}$ b) $-\frac{1}{2}$ c) -1 d) -1

- e) $\sqrt{3}$ f) $\sqrt{2}$

3. a) 0.64 b) -0.82 c) -2.36 d) -1.19

4. a) -1.25 b) -0.73 c) 1.03 d) 0.68

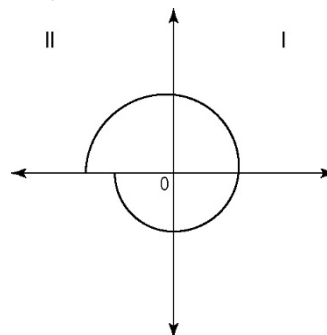
5. a) II or III b) I or II c) I or III
 d) IV e) IV f) II

6. a) $-\sin 50^\circ$ b) $\cos 50^\circ$ c) $-\tan 80^\circ$
 d) $-\csc 80^\circ$ e) $\cot 20^\circ$ f) $\sec 70^\circ$

7. a) 135° , 315° b) -30° , 30°
 c) 30° d) -270° , 90°

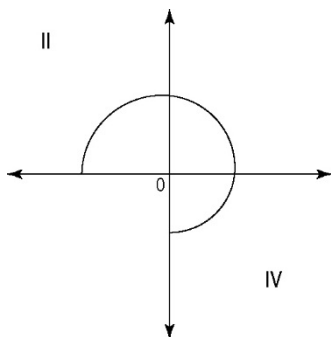
8. a) $\frac{\pi}{3}$, $\frac{2\pi}{3}$ b) $-\pi$, π c) $\frac{2\pi}{3}$, $\frac{4\pi}{3}$ d) $-\frac{\pi}{4}$, $\frac{3\pi}{4}$, $\frac{7\pi}{4}$

9. a) two solutions; 0.43, 2.71

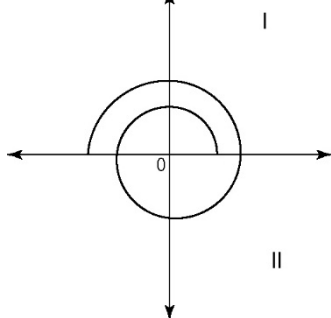


- b) two solutions: -2.03 , 2.94

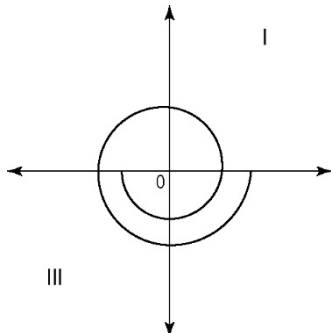




c) three solutions: $-281.85^\circ, -78.15^\circ, 78.15^\circ$



d) three solutions: $-123.69^\circ, 56.31^\circ, 236.31^\circ$



$$\begin{aligned}
 10. \quad \sin \theta &= -\frac{12}{13} & \csc \theta &= -\frac{13}{12} \\
 \cos \theta &= \frac{5}{13} & \sec \theta &= \frac{13}{5} \\
 \tan \theta &= -\frac{12}{5} & \cot \theta &= -\frac{5}{12}
 \end{aligned}$$

BLM 4-6 Section 4.4 Extra Practice

1. a) $60^\circ, 300^\circ$ b) $120^\circ, 300^\circ$

c) $30^\circ, 150^\circ$ d) $120^\circ, 240^\circ$

2. a) $\frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$ b) $\frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$

c) $\frac{\pi}{2}, \frac{\pi}{4}, \frac{5\pi}{4}$ d) $\frac{\pi}{3}, \frac{5\pi}{3}$

3. a) $\frac{\pi}{2}$ b) $0, \frac{\pi}{3}, \frac{5\pi}{3}$ c) $-\frac{\pi}{2}, \frac{\pi}{2}, \frac{\pi}{6}, \frac{5\pi}{6}$

4. a) 1.35, 4.49 b) 1.76, 4.90

c) 1.14, 2.00 d) 0.08, 3.22

5.	LS	RS	LS	RS
	$\sin^2 \theta - 1$	0	$\sin^2 \theta - 1$	0

$$\begin{aligned}
 &= \left(\sin \frac{\pi}{2} \right)^2 - 1 & & = \left(\sin \frac{3\pi}{2} \right)^2 - 1 \\
 &= (1)^2 - 1 & & = (-1)^2 - 1 \\
 &= 0 & & = 0
 \end{aligned}$$

6. No. Example: The range of the cosine function is $[-1, 1]$. Cosine is undefined for values that are outside of this range.

7. a) 0.7854, 2.1910, 3.9270, 5.3326

b) 1.1071, 1.240, 4.2487, 4.3906

c) 0, 1.3258, 4.4674

8. $2\pi n, n \in \mathbb{I}$

9. $x = \pi n, -\frac{\pi}{2} + 2\pi n$

10. $(1+4n)\frac{\pi}{6}, n \in \mathbb{I}$

