Name ______________________ Date ______________ Class______________

LESSON 10-3

Practice C

The Unit Circle

Convert each measure from degrees to radians or from radians to degrees.

1. $-\frac{3\pi}{2}$ ______________
2. 450° ______________
3. $\frac{5\pi}{18}$ ______________
4. –200° ______________
5. $\frac{7\pi}{4}$ ______________
6. $-\frac{11\pi}{6}$ ______________
7. 350° ______________
8. $\frac{7\pi}{20}$ ______________
9. 12° ______________
10. $\frac{13\pi}{10}$ ______________
11. 222° ______________
12. –105° ______________

Find the exact value of the sine, cosine, and tangent of each angle.

13. 330° ______________
14. $\frac{7\pi}{4}$ ______________
15. 240° ______________
16. $\frac{5\pi}{6}$ ______________
17. 225° ______________
18. 120° ______________
19. 45° ______________
20. $-\pi$ ______________
21. $-\frac{5\pi}{6}$ ______________
22. $-\frac{\pi}{4}$ ______________
23. $-\frac{\pi}{3}$ ______________
24. 135° ______________

Solve.

25. A pendulum is 18 feet long. Its central angle is 44°. The pendulum makes one back and forth swing every 12 seconds. To the nearest foot, how far does the pendulum swing each minute?

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15. $\sqrt{3}$

16. $\frac{1}{2}; -\frac{\sqrt{3}}{2}; -\frac{\sqrt{3}}{3}$

17. $\frac{\sqrt{2}}{2}; -\frac{\sqrt{2}}{2}; -1$

18. $\frac{\sqrt{3}}{2}; \frac{1}{2}; \sqrt{3}$

19. $-\frac{1}{2}; \frac{\sqrt{3}}{2}; -\frac{\sqrt{3}}{3}$

20. $-\frac{\sqrt{3}}{2}; -\frac{1}{2}; \sqrt{3}$

21. $-\frac{\sqrt{2}}{2}; -\frac{\sqrt{2}}{2}; 1$

22. 2073 mi

Practice C

1. –270°

2. $\frac{5\pi}{2}$ radians

3. 50°

4. $-\frac{10\pi}{9}$ radians

5. 315°

6. –330°

7. $\frac{35\pi}{18}$ radians

8. 63°

9. $\frac{\pi}{15}$ radians

10. 234°

11. $\frac{37\pi}{30}$ radians

12. $-\frac{7\pi}{12}$ radians

13. $-\frac{1}{2}; \frac{\sqrt{3}}{2}; -\frac{\sqrt{3}}{3}$

14. $-\frac{\sqrt{2}}{2}; \frac{\sqrt{2}}{2}; -1$

15. $-\frac{\sqrt{3}}{2}; -\frac{1}{2}; \sqrt{3}$

16. $\frac{1}{2}; -\frac{\sqrt{3}}{2}; -\frac{\sqrt{3}}{3}$

17. $-\frac{\sqrt{2}}{2}; -\frac{\sqrt{2}}{2}; 1$

18. $\frac{\sqrt{3}}{2}; -\frac{1}{2}; -\sqrt{3}$

19. $\frac{\sqrt{2}}{2}; \frac{\sqrt{2}}{2}; 1$

20. 0; –1; 0

21. $-\frac{1}{2}; -\frac{\sqrt{3}}{2}; -\frac{\sqrt{3}}{3}$

22. $-\frac{\sqrt{2}}{2}; \frac{\sqrt{2}}{2}; -1$

23. $-\frac{\sqrt{3}}{2}; \frac{1}{2}; -\sqrt{3}$

24. $\frac{\sqrt{2}}{2}; -\frac{\sqrt{2}}{2}; -1$

25. 138 ft

Reteach

1. $-\frac{\pi}{4}$ radians

2. $\frac{5\pi}{6}$ radians

3. $\frac{7\pi}{6}$ radians

4. $-\frac{2\pi}{3}$ radians

5. 240°

6. –270°

7. 30°

8. 300°

9. 45°

10. $\sin 45° = \frac{\sqrt{2}}{2}$

$\cos 45° = \frac{\sqrt{2}}{2}$

$\tan 45° = 1$

11. $\sin 315° = -\frac{\sqrt{2}}{2}$

$\cos 315° = \frac{\sqrt{2}}{2}$

$\tan 315° = -1$

Challenge

1. 6080 ft
2. 1,600,921 mi; 66,705 mi/h
3. Area of circle = πr^2; A sector whose central angle has a measure of θ radians has an area of $\frac{\theta}{2\pi}$ times the area of the circle. So Area of sector $= \frac{\theta}{2\pi}\left(\pi r^2\right) = \frac{1}{2}\theta r^2$.
4. $\frac{\pi}{4}$

Problem Solving

1. a. $r = \frac{\pi}{2}$

   b. $\theta = \frac{2\pi}{6}$ *or* $\frac{\pi}{3}$

   c. $S = r\theta = \frac{\pi}{2} \cdot \frac{\pi}{3} = \frac{\pi^2}{6}$

   d. 1.64 in.

   e. Yes; possible answer: because the arc length of the fragment is very close to the arc length that would be expected for a plate of diameter π

2. $\frac{1}{4}$

3. C

4. H

5. B

6. F

Reading Strategy

1. 2π

2. 0