D DIAGNOSTIC TEST: TRIGONOMETRY

1. Convert from degrees to radians.
   (a) 300° (b) -18°
2. Convert from radians to degrees.
   (a) $5\pi/6$ (b) 2
3. Find the length of an arc of a circle with radius 12 cm if the arc subtends a central angle of 30°.
4. Find the exact values.
   (a) $\tan(\pi/3)$ (b) $\sin(7\pi/6)$ (c) $\sec(5\pi/3)$
5. Express the lengths a and b in the figure in terms of θ.

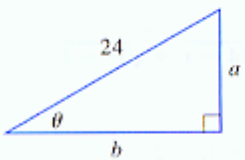

FIGURE FOR PROBLEM 5

6. If $\sin x = \frac{1}{3}$ and $\sec y = \frac{5}{4}$, where x and y lie between 0 and $\pi/2$, evaluate $\sin(x + y)$.
7. Prove the identities.
   (a) $\tan\theta \sin\theta + \cos\theta = \sec\theta$
   (b) $\dfrac{2\tan x}{1 + \tan^2 x} = \sin 2x$
8. Find all values of x such that $\sin 2x = \sin x$ and $0 \leq x \leq 2\pi$.
9. Sketch the graph of the function $y = 1 + \sin 2x$ without using a calculator.

ANSWERS TO DIAGNOSTIC TEST D: TRIGONOMETRY

1. (a) $5\pi/3$ (b) $-\pi/10$
2. (a) 150° (b) $360/\pi \approx 114.6^\circ$
3. 2π cm
4. (a) $\sqrt{3}$ (b) $-\frac{1}{2}$ (c) 2
5. (a) $24\sin\theta$ (b) $24\cos\theta$
6. $\frac{1}{15}(4 + 6\sqrt{2})$
8. $0, \pi/3, \pi, 5\pi/3, 2\pi$
9. 

If you have had difficulty with these problems, you should look at Appendix D of this book.