Trigonometric Functions
Review for Test 7

Use the sum and difference identities to find the exact value of each function.

1. cos 75°

2. sin -195°

Use the double-angle identities to find the exact value of each function.

3. sin 480°

4. cos 660°

Use the half-angle identities to find the exact value of each function.

5. cos 15°

6. sin 165°

For #7 –8, If cos x = $\frac{20}{101}$, and x is in the first quadrant, find each of the following.

7. $\sin 2x$

8. $\cos \frac{1}{2}x$

For #9 –10, If cos x = $\frac{39}{89}$, and x is in the first quadrant, find each of the following.

9. $\cos 2x$

10. $\sin \frac{1}{2}x$

Verify the following equations.

11. $\sin\theta\cos\theta+\cos^2\theta=\dfrac{\cos\theta(1+\cot\theta)}{\csc\theta}$

12. $\dfrac{1+\csc x}{\sec x}-\cot x=\cos x$

13. $(\sin\alpha+\cos\alpha)^2+(\sin\alpha-\cos\alpha)^2=2$

14. $\csc\beta+\cot\beta=\dfrac{\sin\beta}{1-\cos\beta}$

Word Problems

15. A ship is 235 meters away from the center of a barrier that measures 162 meters from end to end. What is the minimum angle that the boat must be turned to avoid hitting the barrier?

16. From the top of a building 38 meters tall, the angle of elevation of the top of a taller building is 62°. The angle of depression of the base of the taller building is 49°. What is the height of the taller building?

17. A 10K race follows a triangular course. The three legs of the race are, in order, 3.3 km, 4.9 km, and 1.8 km. Find the angle between the starting leg to the finishing leg to the nearest degree.

18. A building is of unknown height. At a distance of 90 feet away from the building, an observer notices that the angle of elevation to the top of the building is 32º and that the angle of elevation to a poster on the side of the building is 12º. How far is the poster from the roof of the building?

Review

Solve for x in the following equations.

19. $\log_7 343 = x$

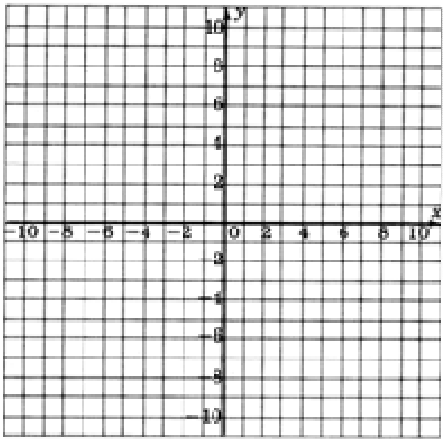
20. $5^{3x} = 496$

21. $\frac{x-3}{x} + \frac{x-4}{x-2} = \frac{2x+1}{3x}$

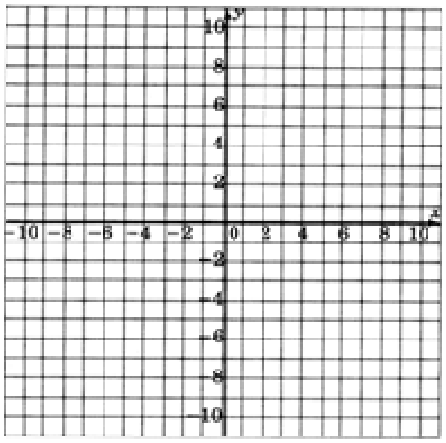
22. $\sqrt{3x-2} = 7$

Graph each function and its parent function on the same set of axes.

23. $y = (x+2)^3$



24. $y = 2^{x-2}$



25. Find the amplitude, period, and phase shift of the equation $y = 3 \sin(2x - 180°)$, then graph:

Amplitude:

Period:

Phase Shift: