

Practice Final Exam

See the Chapter Reviews for summaries of basic information and additional problems.

Show all your work. Full credit is based on work shown!

1. a. Draw a sketch of the angle $\frac{7\pi}{12}$. b. What is this angle expressed in degrees?

2. **Evaluate** (without a calculator) giving the **exact value** for each of the following.
(Draw and label the sides of the reference triangle.)

a. $\cos 150^\circ =$ _____

b. $\sin \frac{5\pi}{4} =$ _____

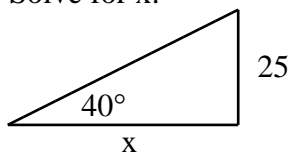
3. a. If $\tan \theta = \frac{4}{11}$ and $\cos \theta < 0$, angle θ is in what quadrant? _____

- b. Draw and label the sides of the reference triangle. c. Determine the remaining five trigonometric functions of θ .

d. $\sin 2\theta$

e. $\sin (\theta/2)$

4. Solve for x.



10. Verify the following identities.

a. $2 \sin x \cos x \sec 2x = \tan 2x$

b. $\tan \theta \cot \theta - \sin^2 \theta = \cos^2 \theta$

11. Solve the following trigonometric equations in the interval $0 \leq \theta < 2\pi$.

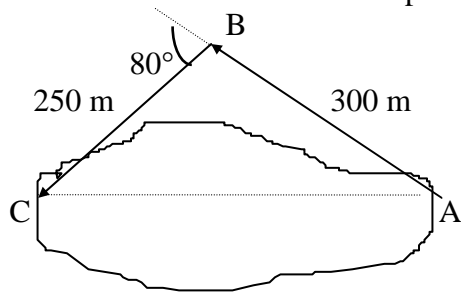
a. $\cos(2\theta) = 0$

b. $2 \sin^2 x + 3 \cos x - 3 = 0$

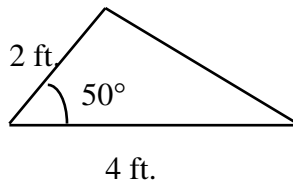
12. Solve the triangle for all sides and angles not given. If two solutions exist, find both.

$A = 58^\circ$, $a = 4.5$ inches, and $b = 5$ inches.

13. To approximate the length of a marsh, a surveyor walks 300 meters from point A to point B, then turns 80° and walks 250 meters to point C. Calculate the approximate length AC across the marsh.



14. Find the area of this triangle.



16.a. Continue this sequence by filling in the next three terms.

6, 11, 16, 21, 26, 31, _____, _____, _____

b. Write the n th term of this sequence. That is, write a formula for a_n .

c. What is the 50th term in this sequence?

d. Find the sum of the first fifty terms.

17. Write the first five terms of the sequence defined by $a_1 = 25$ and $a_{k+1} = -\frac{3}{5}a_k$.

18. Find the sum. $\sum_{k=1}^{\infty} 4 \left(\frac{2}{3}\right)^{k-1}$