If you have not memorized the half-angle and double-angle identities, you may write them down to refer to while taking this test.

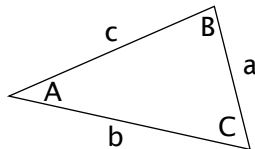Evaluate each expression.

1. cos 135° + sin 30° =

2. cos 45° sin 45° – sin 30° cos 60° =

Find the unknown sides and angles.

3. A = 65°, C = 70°, c = 10.5

4. a = 5, b = 8, C = 55°

Use the half-angle identities to find the value of the following expressions.

5. sin 22.5°

6. sec 67.5°

7. tan 105°

8. cos 195°

Prove that each of the following equations is an identity.

9. $\dfrac{1+\cos\ \theta}{\sin\ \theta} + \dfrac{\sin\ \theta}{1+\cos\ \theta} = 2\ \csc\ \theta$

10. $\dfrac{\sin^2\alpha}{1-\cos\ \alpha} = 1 + \dfrac{1}{\sec\ \alpha}$

11. $\dfrac{\tan^2\theta - 1}{\tan\ \theta - \cot\ \theta} = \tan\ \theta$