

Name: _____

UIN: _____

T/TH class time:: _____

email: _____

- You are expected to abide by the University's rules concerning Academic Honesty.
 - You may *not* use your books, notes, or any electronic device including calculators and cell phones.
 - Show ALL your work. Unsupported answers will not receive credit.
 - Always state a complete answer to the problem.
 - Do not write above the type at the top of any pages. If you do, your work may not be graded in that area, because the scanner may miss it. Please check that all the page numbers on each page of your exam match.
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Circle your instructor and TA:

Cohen: Alibek Li

Kashcheyeva: Davies Zheng

Calamaro: Aldirawi Fox Sartipi Meyer Tian Mess

1. Find the exact value of the following.

$$\tan^{-1}(-1)$$

$$\csc^{-1}(2)$$

2. Grace is planning a triangular garden with sides of length 3, 7, and 8 meters. What is the area of the garden?

3. Use Sum/Difference or Double/Half angle formulas to find the exact value of the following.

$$\tan\left(\frac{5\pi}{12}\right)$$

4. Solve the following equation. Write the general form of the solution.

$$2\sin^2\theta + \sin\theta - 1 = 0$$

5. Given $\cos(t) = -\frac{3}{5}$ and $\pi < t < \frac{3\pi}{2}$, find the following. Use the appropriate identity to solve.
- a. $\sin(t)$

b. $\sin(2t)$

c. $\tan\left(\frac{t}{2}\right)$

6. Verify the following identities.

a.

$$\tan^2 \theta \cos^2 \theta + \cot^2 \theta \sin^2 \theta = 1$$

b.

$$\sin\left(\frac{\pi}{2} + \theta\right) = \cos \theta$$

7. A tree is 53 feet tall and casts a shadow that is 38 feet long. Find the angle of elevation, θ , to the sun. Sketch a diagram of this, labeling the given parts and θ . Leave your answer exact.

8. A ski lift platform is 0.7 miles from the base of the mountain. The angle of elevation from the platform to the top of the mountain is 20° , and the angle of elevation from the base of the mountain to the top of the mountain is 50° . Refer to the diagram below.

Find the length of the ski lift riding from the platform to the top of the mountain. Leave your answer exact.

