MAC 1114 Practice Test #1 Chapters 1-2 Lial

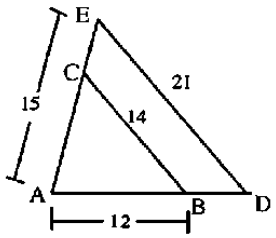
1. Find an angle supplementary to 37°30'
Answer: 142°30'

2. Find the angle of smallest possible positive angle coterminal with 530°
Answers: 170°

3. A pulley rotates at 450 rpm. How many revolutions does the pulley make in one second?
Answer: 7.5

4. A pulley rotates through 60° in one second. How many rotations does the pulley make in one minute?
Answer: 10 rotations

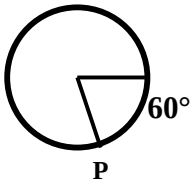
5. In the diagram below, triangle ABC is similar to triangle ADE.
Find the length of the side AC.



Answer: 10

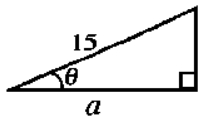
6. Use cofunctions identities to find the solution of cos θ = sin 5θ. Assume θ is acute.
Answer: θ =15°

7. Find the coordinates of the point P on the circle of radius 2, if the central angle is 60°.



Answer: (1, -$\sqrt{3}$)

8. In the triangle pictured below, $\cos(\theta) = 0.712$**. What is the length of *a* to the nearest tenth?**

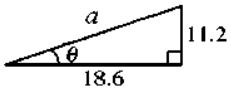


Answer: *a* = 10.7

9. A painter needs to reach a ladder to a point 6.5 meters up the side of a house. If the ladder is to make a 55° angle with the ground, how long must the ladder be?

Answer: 7.9 meters

10. Solve the triangle pictured in the figure below. Give θ to the nearest degree.



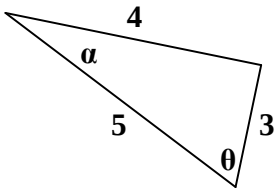
Answer: θ = 31 °, *a* = 21.71

11. The point $(-\sqrt{3}, -2)$ **is on the terminal side of an angle θ. Find the exact value of cos θ.**
Answer: cos θ = $-\sqrt{3/7}$

12. If cos *x* = -2/5 and sin <0, find tan *x* exactly.

Answer: tan *x* = $\sqrt{21}/2$

13. Find the following trigonometric ratios of the triangle:

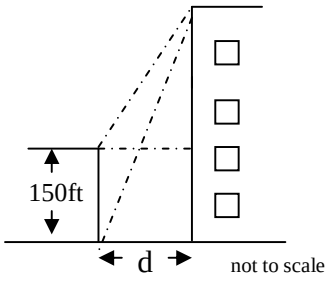


cos θ = **tan (90°- α) =** **csc θ =**

cot θ = **tan α =** **sec (90°- θ) =**

Ans: cos θ = 3/5, tan (90°- α) = 4/3, csc θ = 5/4, cot θ =3/4tan α =3/4 sec (90°- θ) =5/4

14. The angle of depression from the top of a tall building to the top of a shorter building is 40°. The angle of depression from the top of a tall building to the base of the shorter building is 65°. If the shorter building is 150 feet tall, what is the distance between the two buildings? How high is the tall building?
Answer: Distance 115ft. (110ft to two significant digits); height 246ft (250ft to two significant digits)



15. An observer is located at the origin of a coordinate system. Find the bearing of an object located at the point (-1, $\sqrt{3}$). You must express your answer using the two ways of describing bearings discussed in book.
Answers: 330°; W 60 N

16. From one point on the ground, the angle of elevation to the top of a tree is measured at 37°. From another point 25 feet closer, the angle of elevation is 48°. How tall is the tree?
Answer: 59 feet