

Math 154 Practice Test Ch 7 & 8.1

Solve the triangle and find the area using the given information. Note – some problems may have 2 solutions, and others may have none.

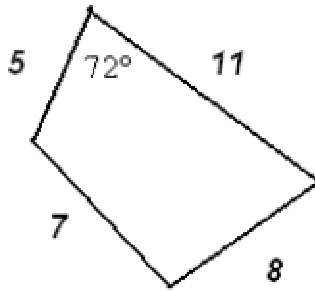
| Problem | A | B | C | a | b | c | Area |
|---------|------------|------------|------------|-----|-----|-----|------|
| 1. | 95° | 45° | | 5 | | | |
| 2. | 20° | 70° | | | | 1 | |
| 3. | | 5° | 10° | 5 | | | |
| 4. | | | 42° | | 21 | 29 | |
| 5. | 35° | | | 6 | 8 | | |
| 6. | | | 60° | 2 | 3 | | |
| 7. | | | | 4 | 3 | 6 | |
| 8. | | 55° | | 4 | | 5 | |
| 9. | | | 50° | 2 | | 1 | |
| 10. | | | | 10 | 10 | 15 | |

11. An equilateral triangle has two equal sides of length 17 inches and a base of 24 inches. Find the measure of the two equal angles.

12. Two sensors are spaced 700 feet apart along the approach to a small airport. When an aircraft is nearing the airport, the angle of elevation from the first sensor to the aircraft is 20° , and from the second sensor to the aircraft is 15° . How high is the aircraft at this time?

13. Jon measures the angle of elevation from the ground where he is standing to the top of an obelisk to be 65° . He then walks 25 feet further from the obelisk, and measures the angle of elevation to be 44° . How tall is the obelisk?

14. Find the area of the given quadrilateral.



15. A man walks 4 km in the direction $N32^\circ W$, then turns and walks 3 km in the direction $S50^\circ W$. How far is he from his starting point, and what is his bearing from the starting point.

16. A triangular lot has sides of 87 ft, 190 ft, and 173 ft. Find the area of the triangle, as well as the area between the 87 ft side and the 190 ft side.

Let $\mathbf{U} = 7\mathbf{i} + 8\mathbf{j}$ and $\mathbf{V} = 2\mathbf{i} - 3\mathbf{j}$. Find the following.

17. $|\mathbf{U}|$

18. $-2\mathbf{U} + 5\mathbf{V}$

19. $|3\mathbf{U} - \mathbf{V}|$

20. $\mathbf{U} \cdot \mathbf{V}$

21. Find the angle between \mathbf{U} and \mathbf{V} .

22. Use the dot product to show that $\mathbf{U} = 10\mathbf{i} - 6\mathbf{j}$ and $\mathbf{V} = 9\mathbf{i} + 15\mathbf{j}$ are perpendicular.

23. Find the value of b so that $\mathbf{U} = 7\mathbf{i} + 3\mathbf{j}$ and $\mathbf{V} = b\mathbf{i} + 10\mathbf{j}$ are perpendicular.

Simplify.

24. $\sqrt{-50}$

25. $(9 - 4i) - (7 - 10i)$

26. $(7 - 6i)(7 + 6i)$

27. $(8 + 3i)^2$

28. $\frac{2 + 3i}{5 + 4i}$

29. i^{75}

30. Find x and y so that the equation $x^2 - 3x + 16i = 10 + 8yi$ is true.