Algebra 2 w/ Trig

9.1 Use Trigonometry with Right Triangles

Warm-Up:

**In right triangle** *ABC***,** *a* **and** *b* **are the lengths of the legs and** *c* **is the length of the hypotenuse. Find the missing** **length. Give exact values.**

**1.** *a* = 6, *b* = 8 **2.** *c* = 10, *b* = 7

**3. If you walk** 2.0 **kilometers due east and then** 1.5 **kilometers****due north, how far will you be from your starting point?**

---------------------------------------------------------------------NOTES----------------------------------------------------------------------------------

Example 1: Evaluate Trigonometric Functions

**Evaluate the six trigonometric functions of the angle**$ θ$**.**



Example 2: Multiple Choice!!



**YOU TRY:**

**Evaluate the six trigonometric functions of the angle** $θ$**.**

**1.**

1.

**4. In a right triangle,** $θ$ **is an acute angle and** $cos θ =\frac{7}{10}$ **. What is** $sin θ$**?**

1.

Example 3: Find an Unknown Side Length of a Right Triangle Example 4: Use a Calculator to Solve a Right Triangle



YOU TRY:

**Solve** $∆ABC$**using the diagram at the right and the given measurements.**

**5.** *B* = 45°, *c* = 5 **6.** *A* = 32°, *b* = 10

**7.** *A* = 71°, *c* = 20 **8.** *B* = 60°, *a* = 7

Example 5: Use Indirect Measurement

**While standing at Yavapai Point near the Grand Canyon, you measure an angle of** 90º **between Powell Point and Widforss Point, as shown. You then walk to Powell Point and measure an angle of** 76º **between Yavapai Point and Widforss Point. The distance between Yavapai Point and Powell Point is about** 2 **miles. How wide is the Grand Canyon between Yavapai Point and Widforss Point?**

Example 6: Use Angle of Elevation

**A parasailer is attached to a boat with a rope** 300 **feet** **long. The angle of elevation from the boat to the parasailer is** 48º**. Estimate the parasailer’s height above the boat.**



YOU TRY:

**9. In Example** 5**, find the distance between Powell Point and Widforss Point.**

**10. What If? In Example** 6**, estimate the height of the parasailer above the boat if the angle of elevation is** 38°**.**

KEEP GOING:

1. **Evaluate the six trigonometric functions of the angle** $θ$***.***
2. **Solve** $∆ABC.$



1. **From a point on the ground** 64 **feet from the base of a tree, the angle of elevation to the top of the tree is** 28°**. Estimate the height of the tree.**

Hw: Section 9.1 p. 560 #3-27 odds, 30-32 all