Name _____ Date _____

LESSON 7.2

Challenge Practice

For use with pages 440–447

Points $A(0, 3)$ and $B(0, -3)$ are two vertices of $\triangle ABC$. Write an equation or inequality that represents the set of all points $C(x, y)$ that satisfy the given requirements. Find any restrictions for x.

1. $\triangle ABC$ is a right triangle. $\overline{AB}$ is the longest side.

2. $\triangle ABC$ is acute. $\overline{AB}$ is the longest side.

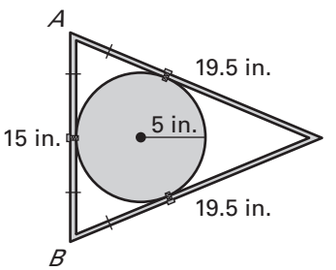
3. $\triangle ABC$ is obtuse. $\overline{AB}$ is the longest side.

4. $\triangle ABC$ is a right triangle. $\overline{AB}$ is not the longest side.

5. $\triangle ABC$ is acute. $\overline{AB}$ is not the longest side.

6. $\triangle ABC$ is obtuse. $\overline{AB}$ is not the longest side.

7. Wood Planter You are building a triangular wood planter around a circular pot so that each wall of the planter touches the pot. A top view of the planter is shown in the diagram. You drill one screw into each wall of the planter to secure it to the pot. The screws are all located the same distance from corners A and B of the planter, as shown. Use the Converse of the Pythagorean Theorem to explain why these screw locations contact the pot exactly where it touches the walls of the planter.



Triangle ABC is acute and has the given side lengths. The longest side is $\overline{AC}$. Find all the possible values of x.

8. $AB = x^2, BC = x + 3, AC = x^2 + 1$

9. $AB = x^2, BC = 3x - 5, AC = x^2 + 2$

10. $AB = x^3 + 2, BC = 2\sqrt{2}x^3, AC = 3x^3$

11. $AB = x^2 + 5, BC = \sqrt{3}x^2, AC = 2x^2 + 3$

12. $AB = 5x - 1, BC = 2x, AC = 3x$

13. $AB = \frac{3}{2}x, BC = \frac{1}{2}x, AC = 2(x - 5)$

14. Similar Triangles Triangle XYZ shown in the graph at the right is similar to $\triangle XPQ$. Point P is located at the origin. In which quadrants might point Q be located? *Explain* your reasoning.