

Unit 8: Pythagorean Theorem and Irrational Numbers

ADVANCED · SET 2

Name: _____

Date: _____

Show your work and give each answer as an exact value. Use plain-text notation: $\text{sqrt}(16)$, 2^3 , fractions like $3/4$, coordinate pairs like $(3, -4)$. Leave irrational answers in simplest radical form unless told to round.

1. A right triangle has legs of length 20 and 21. Find the exact length of the hypotenuse.

Answer: _____

2. A rectangular box has dimensions $4 \times 12 \times 3$. Find the exact length of the interior space diagonal (from one corner to the opposite corner).

Answer: _____

3. Find the distance between the points $(-6, 5)$ and $(9, -3)$ in the coordinate plane. Give the exact value.

Answer: _____

4. Evaluate the cube root of 2^9 . That is, find $(2^9)^{(1/3)}$, the cube root of 512.

Answer: _____

5. A right triangle has a hypotenuse of length 26 and one leg of length 10. Find the length of the other leg.

Answer: _____

6. Simplify $\text{sqrt}(180)$ to simplest radical form (of the form $a\text{sqrt}(b)$ with b as small as possible).

Answer: _____

7. The three side lengths of a triangle are 12, 35, and 37. Is this a right triangle? Answer yes or no.

Answer: _____

8. Solve for the positive value of x : $x^2 = 144/49$. Give the answer as a fraction.

Answer: _____

9. A square has an area of 200 square units. Find the exact length of its diagonal in simplest radical form.

Answer: _____

10. Two vertical poles stand on level ground. One is 6 m tall, the other is 22 m tall, and their bases are 30 m apart. Find the exact straight-line distance between their tops.

Answer: _____

11. Find the perimeter of the triangle with vertices $A(0, 0)$, $B(6, 8)$, and $C(6, 0)$. Give the exact numeric value.

Answer: _____

12. A cube has an interior space diagonal of length 12. Find the exact side length of the cube in simplest radical form.

Answer: _____