

Problem Set 4

Use the π button on your calculator instead of typing in 3.14. Present exact values (preferred) or round approximations to three decimal places.

1. Use your calculator to find the 3 decimal approximation for

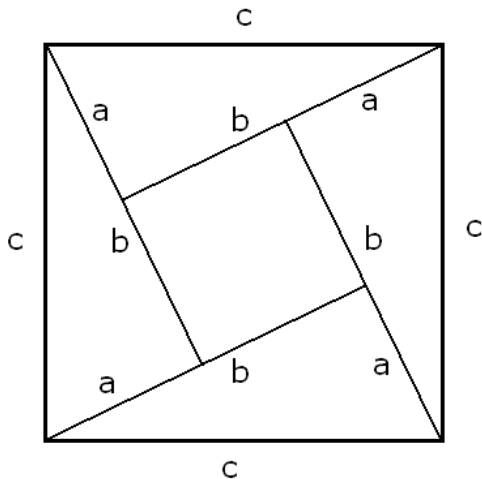
- (a) $\sin 17^\circ =$
- (b) $\sin 57^\circ =$
- (c) $\tan 45^\circ =$
- (d) $\sin^2 37^\circ + \cos^2 37^\circ =$

2. Find the 3 decimal approximation for the smallest angle α , in degrees, so that $\sin \alpha = \frac{3}{4}$.

3. The radius of a circle is 7 cm.

- (a) Find the length of an arc subtended by a central angle of 120° .
- (b) Find the area of a sector subtended by a central angle of 120° .

4. This is a proof of the Pythagorean Theorem. Let ABC be a right triangle, with $\gamma = 90^\circ$. We use four identical triangles to construct the following picture.



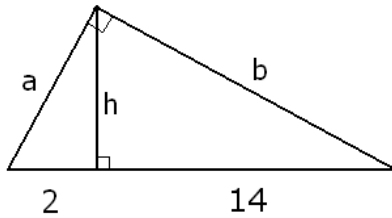
- (a) Find the area of the big square in terms of its sides.
- (b) Find the area of the small rectangle in the middle.
- (c) Find the area of the big rectangle as the following sum: the areas of the four right triangles and the area of the small rectangle in the middle.

5. Use the regular triangle with sides 2, to find the exact values for

- (a) $\sin 30^\circ =$
- (b) $\cos 60^\circ =$

(c) $\tan 30^\circ =$

6. The pendulum of a clock moves through an angle of 20° . During one swing, the end of the pendulum travels 0.6 m. How long is the pendulum?
7. Find a , b , and h .



8. Find the measure of an inner angle of a regular polygon with 10 sides.
9. An object is traveling on a circular orbit of radius 200 miles. It completes a cycle in 24 minutes. Find the speed of the object. Express your answer in miles per hour.
10. Find the distance between $(4, -11)$ and $(-16, 10)$.
11. Find the area of the triangle ABC , where $A(-4, -3)$, $B(8, 1)$, and $C(-5, 1)$.
12. The sides of a rectangle are 20 and 21 long. Find the length of the diagonal.