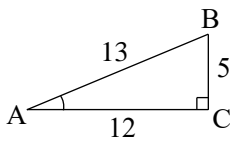


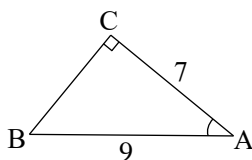
Graphics and Measurement

1

(1) Find the values of $\sin A$, $\cos A$, and $\tan A$ in right triangle ABC shown on the right.

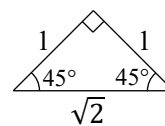
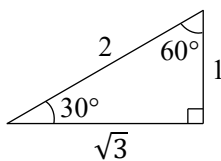


(2) Find the values of $\sin A$, $\cos A$, and $\tan A$ in right triangle ABC shown on the right.



(3) Using the right triangle shown on the right as a reference, find the values of the following trigonometric ratios.

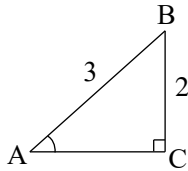
- ① $\sin 45^\circ$
- ② $\cos 60^\circ$
- ③ $\tan 30^\circ$



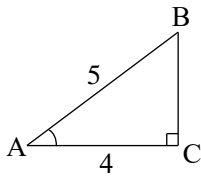
2

Using the table of trigonometric ratios, find the approximate size A of angle A in right triangle ABC in the following figures.

(1)



(2)



(3)

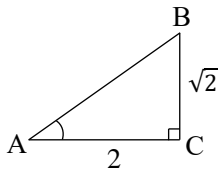


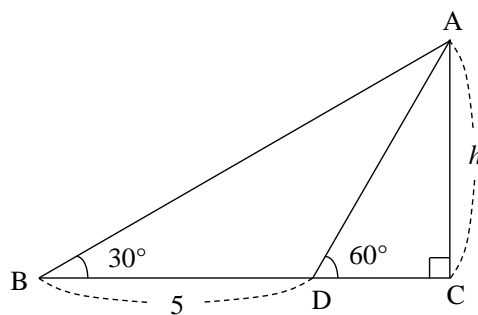
Table of trigonometric ratios

A	$\sin A$	$\cos A$	$\tan A$	A	$\sin A$	$\cos A$	$\tan A$
\sim				35°	0.5736	0.8192	0.7002
25°	0.4226	0.9063	0.4663	36°	0.5878	0.8090	0.7265
26°	0.4384	0.8988	0.4877	37°	0.6018	0.7986	0.7536
27°	0.4540	0.8910	0.5095	38°	0.6157	0.7880	0.7813
28°	0.4695	0.8829	0.5317	39°	0.6293	0.7771	0.8098
29°	0.4848	0.8746	0.5543	40°	0.6428	0.7660	0.8391
30°	0.5000	0.8660	0.5774	41°	0.6561	0.7547	0.8693
31°	0.5150	0.8572	0.6009	42°	0.6691	0.7431	0.9004
32°	0.5299	0.8480	0.6249	43°	0.6820	0.7314	0.9325
33°	0.5446	0.8387	0.6494	44°	0.6947	0.7193	0.9657
34°	0.5592	0.8290	0.6745	45°	0.7071	0.7071	1.0000
\sim							

The table above is an excerpt of the relevant parts of this file.

3

Find h in the figure on the right.



4

θ shall be an acute angle.

(1) Find the values of $\sin \theta$ and $\tan \theta$ when $\cos \theta = \frac{1}{3}$.

(2) Find the values of $\sin \theta$ and $\cos \theta$ when $\tan \theta = \frac{1}{7}$.

5

Express the following trigonometric ratios for angles smaller than 45° .

(1) $\sin 80^\circ$

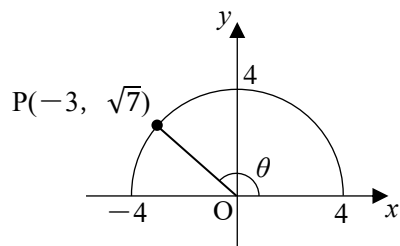
(2) $\cos 50^\circ$

(3) $\tan 64^\circ$

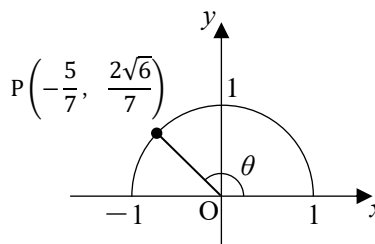
6

(1) In the following figures, find the values of $\sin\theta$, $\cos\theta$ and $\tan\theta$.

①



②



(2) Find the values of the following trigonometric ratios.

① $\sin 120^\circ$

② $\cos 135^\circ$

③ $\tan 150^\circ$

7

Express the following trigonometric ratios for angles smaller than 90° .

(1) $\sin 160^\circ$

(2) $\cos 105^\circ$

(3) $\tan 128^\circ$

8

When $0^\circ \leq \theta \leq 180^\circ$, find θ satisfying the following equations.

(1) $\sin \theta = \frac{\sqrt{3}}{2}$

(2) $\cos \theta = -\frac{1}{\sqrt{2}}$

(3) $\tan \theta = -\sqrt{3}$

9

$0^\circ \leq \theta \leq 180^\circ$.

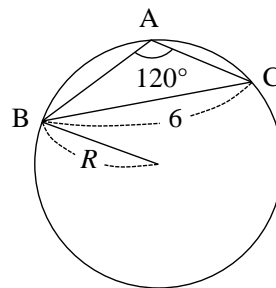
(1) Find the values of $\cos \theta$ and $\tan \theta$ when $\sin \theta = \frac{15}{17}$.

(2) Find the values of $\sin \theta$ and $\cos \theta$ when $\tan \theta = -\frac{2}{11}$.

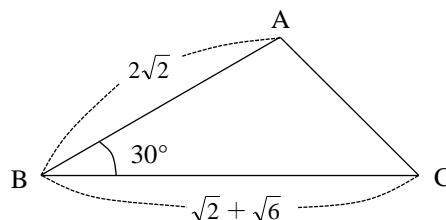
10

In $\triangle ABC$, let the lengths of sides BC , CA , and AB be denoted by a , b , and c , respectively, and the sizes of $\angle A$, $\angle B$, and $\angle C$ be denoted by A , B , and C , respectively.

- (1) Find the radius R of the circumscribed circle when $A = 120^\circ$ and $a = 6$.



- (2) Find A , b , and C when $a = \sqrt{2} + \sqrt{6}$, $B = 30^\circ$, and $c = 2\sqrt{2}$, respectively.



1 1

If $\cos A \sin C = \sin B$, what shape of triangle is $\triangle ABC$?

1 2

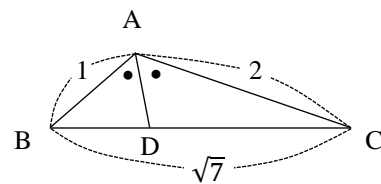
Find the area of the following $\triangle ABC$.

(1) $AB=3$, $AC=4$, $A=45^\circ$

(2) $AB=3$, $AC=5$, $BC=7$

13 Fill in the blanks below.

In $\triangle ABC$, when $a=\sqrt{7}$, $b=2$ and $c=1$, $\cos A = \boxed{(a)}$,
 i.e., $\angle A = \boxed{(b)}$. Therefore, the area of $\triangle ABC$ is
 $\boxed{(c)}$. Furthermore, if the intersection of the bisector of angle A
 and BC is D, then the length of AD is $\boxed{(d)}$.



14

Find the radius r of the inscribed circle in $\triangle ABC$ when $A=45^\circ$, $b=8$, and $c=\sqrt{2}$.

Study 1

In quadrilateral ABCD inscribed in a circle, find the length of diagonal AC and the area S of quadrilateral ABCD when $AB=6$, $BC=7$, $CD=2$, and $DA=3$, respectively.

Study 2

Find the volume of a regular triangular pyramid ABCD, as shown in the figure on the right.

