

Inverse Cosine (C)

For every real number $x \in [-1, 1]$ there is an angle between 0 and 180 degrees, or, in radian measure, between 0 and π radians, whose cosine is x . This angle is denoted by $\arccos(x)$, called the **arc cosine** or **inverse cosine**. Most calculators will return approximate values of $\arccos(x)$ for given values of x . Some the important values, are given in the following table. When using a calculator, be sure to check whether it is set in degree or radian mode.

x	$\arccos(x)$ in radians	$\arccos(x)$ in degrees
-1	π	180
$-\sqrt{3}/2$	$5\pi/6$	150
$-\sqrt{2}/2$	$3\pi/4$	135
$-1/2$	$2\pi/3$	120
0	$\pi/2$	90
$1/2$	$\pi/3$	60
$\sqrt{2}/2$	$\pi/4$	45
$\sqrt{3}/2$	$\pi/6$	30
1	0	0

Exercises Give the following angles exactly in radians and degrees if possible. If not, give their decimal approximations to 5 decimal places in radians and to the nearest second if in degrees.

1. $\arccos(1/2)$;
2. $\arccos(1/3)$;
3. $\arccos(-1/3)$