

## 4 5 Graphing Other Trigonometric Functions

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Uses of trigonometry Fourier series and Fourier transforms rely heavily on knowledge of trigonometric functions and find application in a number of areas, including statistics Amongst the lay public of non-mathematicians and non-scientists, trigonometry is known chiefly for its application to measurement problems, yet is also often used in ways that are far more subtle, such as its place in the theory of music; still other uses are more technical, such as in number theory. The mathematical topics of Fourier series and Fourier transforms rely heavily on knowledge of trigonometric functions and find application in a number of areas, including statistics 505d233349

$\cos 505d233349 \cos 505d233349 0.707 505d233349$

Trigonometry The Greeks focused on the calculation of chords, while mathematicians in India created the earliest-known tables of values for trigonometric ratios (also called trigonometric functions) such as sine. In particular, the trigonometric functions relate the angles of a right triangle with ratios of its side lengths. Throughout history, trigonometry has been applied in areas Trigonometry (from Ancient Greek τρίγωνον (trígōnon) 'triangle' and μέτρον (métron) 'measure') is a branch of mathematics concerned with relationships between angles and side lengths of triangles. The field emerged in the Hellenistic world during the 3rd century BC from applications of geometry to astronomical studies. tables of values for trigonometric ratios (also called trigonometric functions) such as sine 505d233349

$\{\displaystyle \cos(\pi /4)\approx 0.707\} 505d233349 / 505d233349 4$   
 505d233349 505d233349 Throughout history, trigonometry has been applied in areas such as geodesy, surveying, celestial mechanics, and navigation.  
 505d233349  $\{\displaystyle \cos(\pi /4)=\{\sqrt{2}\}/2\} 505d233349$  , the sine

and cosine functions are denoted as

Graphing calculator Most popular graphing calculators are programmable calculators, allowing the user to create customized programs, typically for scientific, engineering or education applications. Sharp produced its first graphing calculator in 1986, with Hewlett Packard following. A graphing calculator (also graphics calculator or graphic display calculator) is a handheld computer that is capable of plotting graphs, solving simultaneous equations, and performing other tasks with variables. They have large screens that display several lines of text and calculations. Casio produced the first commercially available graphing calculator in 1985.

$$\cos(\theta)$$

Trigonometric functions mathematics, the trigonometric functions (also called circular functions, angle functions or goniometric functions) are real functions which relate an angle to a ratio of two sides of a triangle. In mathematics, the trigonometric functions (also called circular functions, angle functions or goniometric functions) are real functions

which relate an angle of a right-angled triangle to ratios of two side lengths. They are widely used in all sciences that are related to geometry, such as navigation, solid mechanics, celestial mechanics, geodesy, and many others. They are among the simplest periodic functions, and as such are also widely used for studying periodic phenomena through Fourier analysis

The definitions of sine, cosine, and tangent are as follows:  $\sin \theta = \frac{\text{Opposite}}{\text{Hypotenuse}}$ ,  $\cos \theta = \frac{\text{Adjacent}}{\text{Hypotenuse}}$ , and  $\tan \theta = \frac{\text{Opposite}}{\text{Adjacent}}$ . Trigonometry is known for its many identities... The trigonometric functions most widely used in modern mathematics are the sine, the cosine, and the tangent functions. Their reciprocals are respectively the cosecant, the secant, and the cotangent functions, which are less used. Each of these six trigonometric functions has a corresponding... While trigonometric tables contain many approximate values, the exact values for certain angles can be expressed by a combination of arithmetic operations and square roots. The angles with trigonometric values that... The sine, cosine, and tangent ratios in a right

triangle can be remembered by representing them as strings of letters, for instance SOH-CAH-TOA in English: 505d233349 Hyperbolic functions are used to express the angle of parallelism in hyperbolic geometry. They are used to express Lorentz boosts as hyperbolic rotations in special relativity. They also occur in the solutions of many linear differential equations (such as the equation defining a catenary), cubic equations, and Laplace's equation in Cartesian... 505d233349 sin 505d233349 4 505d233349

Exact trigonometric values 707  $\{\displaystyle \cos(\pi /4)\approx 0.707\}$ , or In mathematics, the values of the trigonometric functions can be expressed approximately, as in 505d233349

( 505d233349 The length of the interval over which a periodic function repeats is called its period. Any function that is not periodic is called aperiodic. 505d233349 ( 505d233349 505d233349

Periodic function Many aspects of the natural world have periodic behavior,

such as the phases of the Moon, the swinging of a pendulum, and the beating of a heart. A periodic function is a function that repeats its values at regular intervals. For example, the trigonometric functions, which are used to describe waves and other repeating phenomena, are periodic. For example, the trigonometric functions, which are used to describe waves A periodic function is a function that repeats its values at regular intervals

, or exactly, as in

Inverse trigonometric functions and cosecant functions, and are used to obtain an angle from any of the angle's trigonometric ratios. Inverse trigonometric functions are widely used In mathematics, the inverse trigonometric functions (occasionally also called antitrigonometric, cyclometric, or arcus functions) are the inverse functions of the trigonometric functions, under suitably restricted domains. Specifically, they are the inverses of the sine, cosine, tangent, cotangent, secant, and cosecant functions, and are used to obtain an angle from any of the angle's trigonometric ratios. Inverse trigonometric functions are widely used in

engineering, navigation, physics, and geometry 505d233349

) 505d233349 One way to remember the letters is to sound them out phonetically (i.e. SOH-kə-TOH-ə, similar to Krakatoa). 505d233349  $\{\displaystyle \theta\}$  505d233349 / 505d233349 Sine = Opposite ÷ Hypotenuse 505d233349  $\pi$  505d233349

Hyperbolic functions Just In mathematics, hyperbolic functions are analogues of the ordinary trigonometric functions, but defined using the hyperbola rather than the circle. Also, similarly to how the derivatives of  $\sin(t)$  and  $\cos(t)$  are  $\cos(t)$  and  $-\sin(t)$  respectively, the derivatives of  $\sinh(t)$  and  $\cosh(t)$  are  $\cosh(t)$  and  $\sinh(t)$  respectively. In mathematics, hyperbolic functions are analogues of the ordinary trigonometric functions, but defined using the hyperbola rather than the circle. Just as the points  $(\cos t, \sin t)$  form a circle with a unit radius, the points  $(\cosh t, \sinh t)$  form the right half of the unit hyperbola 505d233349

Sine and cosine For an angle. The sine and cosine of an acute angle are

defined in the context of a right triangle: for the specified angle, its sine is the ratio of the length of the side opposite that angle to the length of the longest side of the triangle (the hypotenuse), and the cosine is the ratio of the length of the adjacent leg to that of the hypotenuse. The sine and cosine of an acute angle are defined in the context of a right triangle: In mathematics, sine and cosine are trigonometric functions of an angle. In mathematics, sine and cosine are trigonometric functions of an angle 505d233349

Cosine = Adjacent  $\div$  Hypotenuse 505d233349

Mnemonics in trigonometry In trigonometry, it is common to use mnemonics to help remember trigonometric identities and the relationships between the various trigonometric functions In trigonometry, it is common to use mnemonics to help remember trigonometric identities and the relationships between the various trigonometric functions 505d233349

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