Trigonometry & Logarithms

Questions

Radians and CAST

Graphs of The Trigonometric Functions

Trigonometric Identities

Exponentials & Logarithms

Radians and CAST

Q1) What is the radian equivalent of the following angles given in degrees?

Write your answer as a multiple of π.

a) $180°$ c) $90°$ e) $45°$

b) $360°$ d) $30°$ f) $60°$

Q2) What is the radian equivalent of the following angles given in degrees?

a) $10°$ b) $40°$ c) $305°$

Q3) What is the degree equivalent of the following angles given in radians?

a) $\frac{3\pi}{2}$ c) 2π e) 1.5 rad

b) $\frac{3\pi}{4}$ d) 2.5 rad f) 3.5 rad

Q4) By consulting a CAST diagram determine whether the following values are positive or negative.

a) $Sin\ 140°$ c) $Tan\ 123°$ e) $Sin\ 325°$

b) $Cos\ 65°$ d) $Cos\ 85°$ f) $Cos\ 90°$

Q5) By consulting a CAST diagram determine whether the following values are positive or negative.

a) $Sin\ \frac{\pi}{3}$ c) $Tan\ \frac{3\pi}{4}$ e) $Sin\ \frac{11\pi}{6}$

b) $Cos\ \frac{2\pi}{3}$ d) $Cos\ \frac{\pi}{6}$ f) $Cos\ \frac{\pi}{4}$

Graphs of The Trigonometric Functions

Q1) Sketch the graph of the following functions on the interval $0 \leq x \leq 360°$

a) $y = \sin x$ b) $y = \cos x$ c) $y = \tan x$

Q2) Sketch the graph of the following functions on the interval $0 \leq x \leq 2\pi$

a) $y = \sin x$ b) $y = \cos x$ c) $y = \tan x$

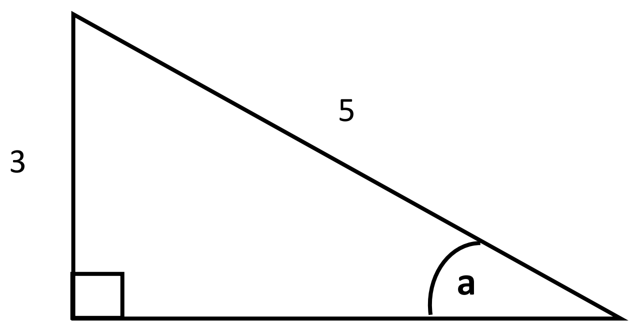
Q3) For each of the following mark the point on a sketch of the relevant function to determine whether the value is positive or negative by seeing if it is above or below the $x - axis$.

a) $Sin\ 230°$ c) $Cos\ 30°$ e) $Tan\ 150°$

b) $Cos\ 170°$ d) $Sin\ 190°$ f) $Cos\ 310°$

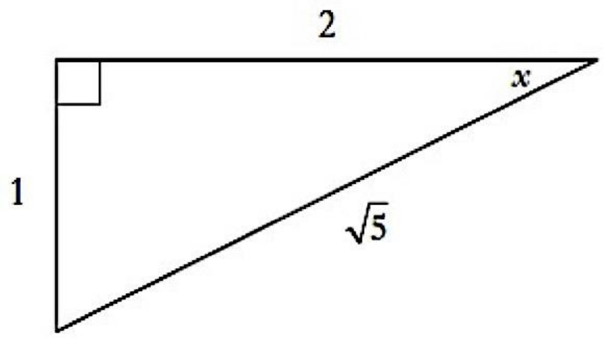
Trigonometric Identities

Q1) The diagram shows a right-angled triangle.



What is the value of a) $Sin\ 2a$ b) $Cos\ 2a$

Q2) The diagram shows a right-angled triangle.



Find the value of $Sin\ 2x$.

Q3) Use the addition formulas to determine the exact value of these expressions.

a) $Sin\ (30° + 60°)$

b) $Cos\ (45° + 45°)$

c) $Cos\ (45° + 30°)$

d) $Cos\ (30° + 45°)$

Q4) Use the addition formulas to determine the exact value of these expressions.

a) $Sin\ \left(\frac{\pi}{3} + \frac{\pi}{6}\right)$

b) $Cos\ \left(\frac{\pi}{2} + \frac{\pi}{3}\right)$

c) $Cos\ \left(\frac{\pi}{2} + \pi\right)$

d) $Cos\ \left(\frac{\pi}{2} + \frac{\pi}{6}\right)$

Exponentials & Logarithms

Q1) Rewrite these exponential expressions as logarithms.

a) $2^7 = 128$

b) $5^3 = 125$

c) $3^3 = 27$

d) $4^3 = 64$

e) $4^t = p$

f) $f = g^h$

Q2) Rewrite these logarithmic expressions as logarithms.

a) $3 = \log_2 8$

b) $\log_3 243 = 5$

c) $y = \log_5 4$

d) $2 = \log_4 16$

e) $0 = \log_x 1$

f) $\log_5 625 = 4$

Q3) Simplify the following expressions.

a) $\log_2 8 + 3\log_2 4 - \log_2 16$

b) $3\log_{10} 5 + \log_{10} 8$

c) $\log_4 36 - 2\log_4 12$

d) $2\log_3 9 + \log_3 5 - \log_3 15$

Q4) Simplify the following expressions.

a) $\frac{1}{3}\log_4 64$

b) $\log_2 \frac{1}{8}$

c) $\log_a a^p$

d) $\log_4 p^0$