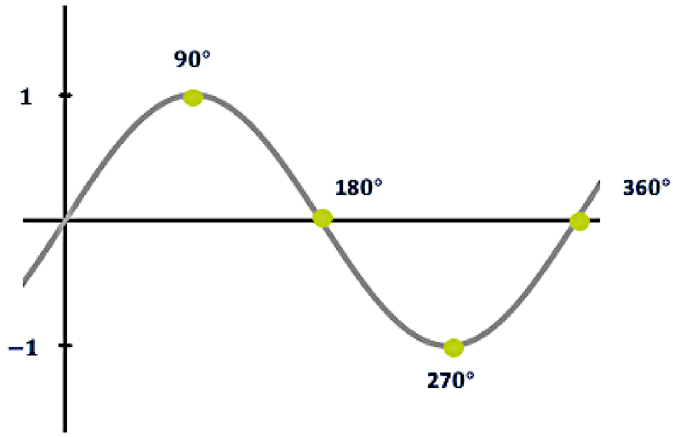
Trigonometric Functions

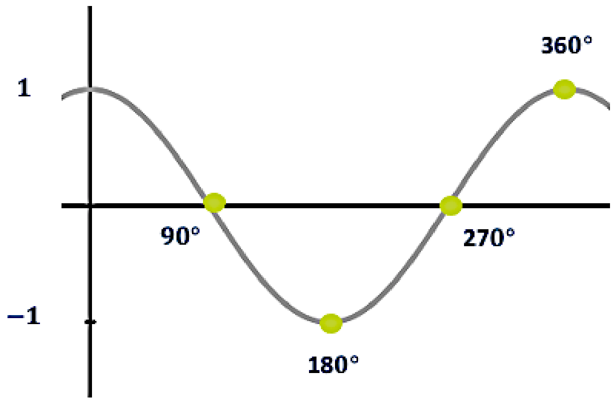
Solutions

Graphs of Trigonometric Functions

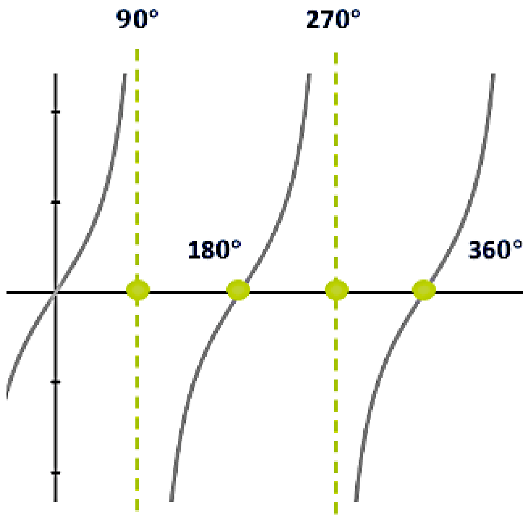
Q1) a) $y = \sin x$



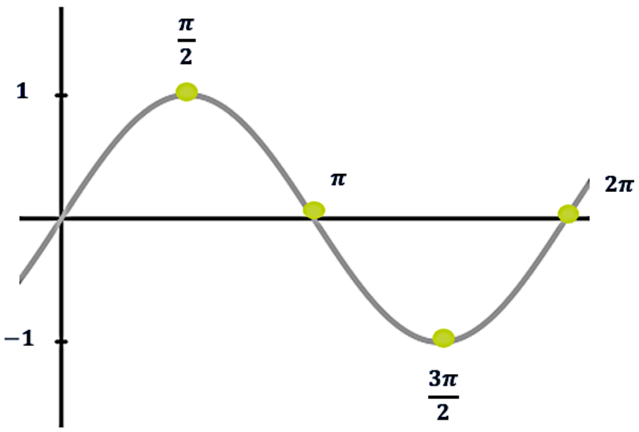
b) $y = \cos x$



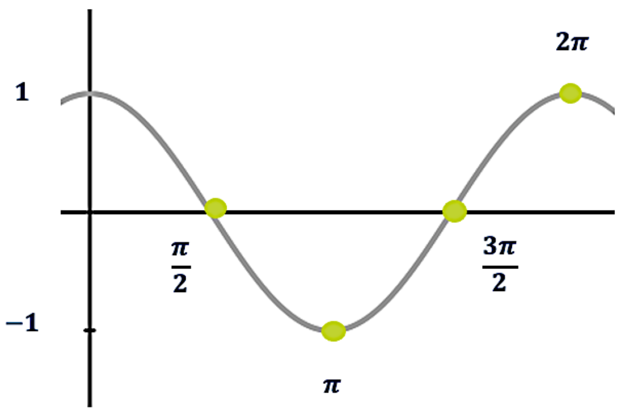
c) $y = \tan x$



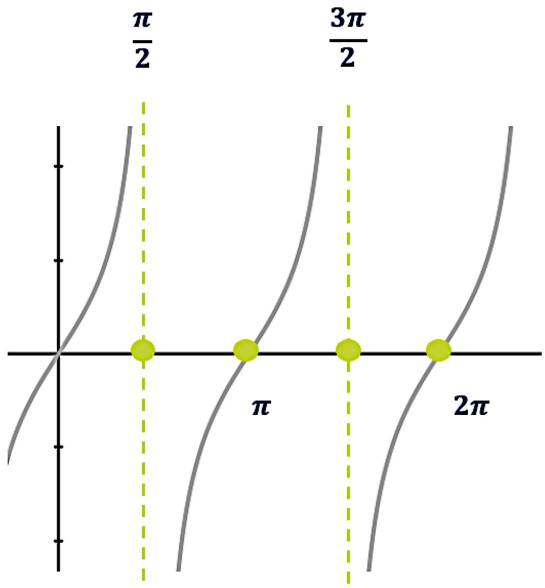
Q2) a) $y = \sin x$



b) $y = \cos x$



c) $y = \tan x$



Q3) a) Negative

b) Negative

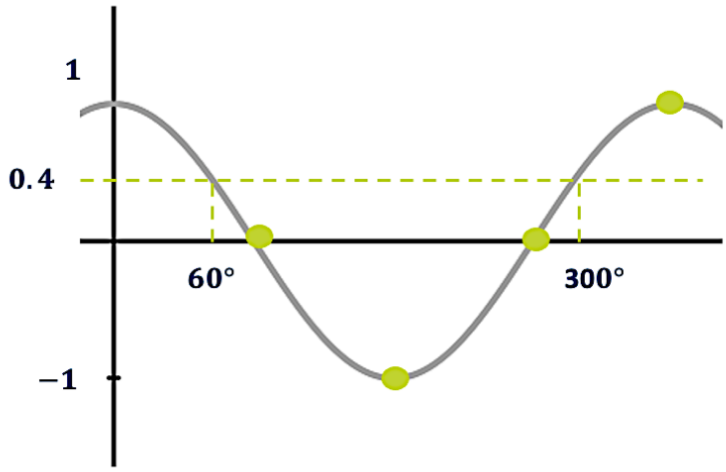
c) Positive

d) Negative

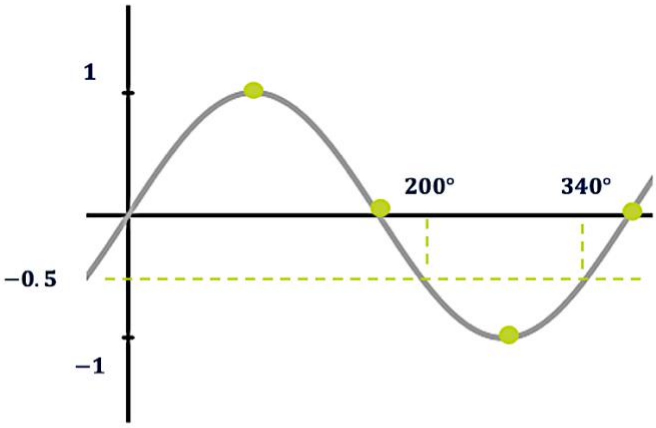
e) Negative

f) Positive

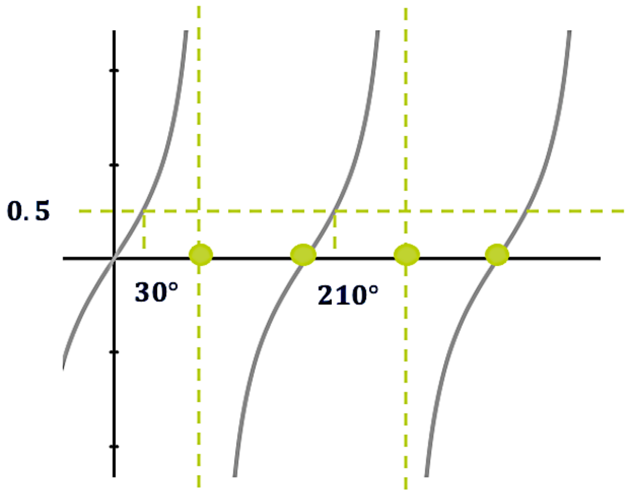
Q4) a) $Cos\ x = 0.4$. Approximately 60° and 300°.



b) $Sin\ x = -0.5$. Approximately 200° and 340°.



c) $Tan\ x = 0.5$. Approximately 30° and 210°.



d) $Cos\ x = 1.2$. Since the horizontal line does not intersect the graph of the Cosine function, there are no values of x for which $Cos\ x = 1.2$.

Graphs of Transformed Trigonometric Functions

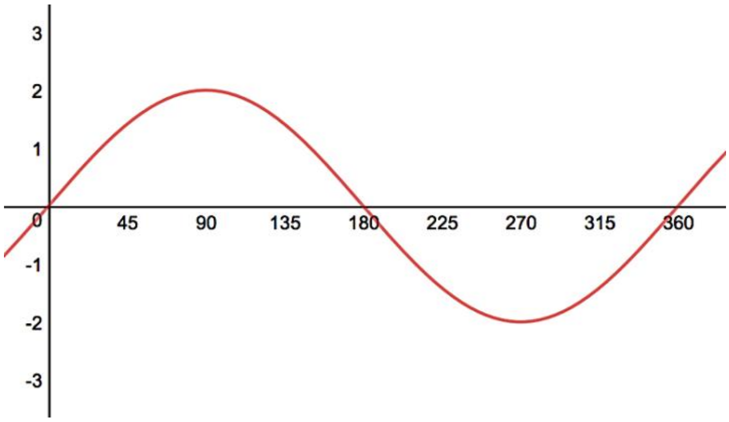
Q1) a) $a = 2, b = 3$

b) $a = 3, b = 45$

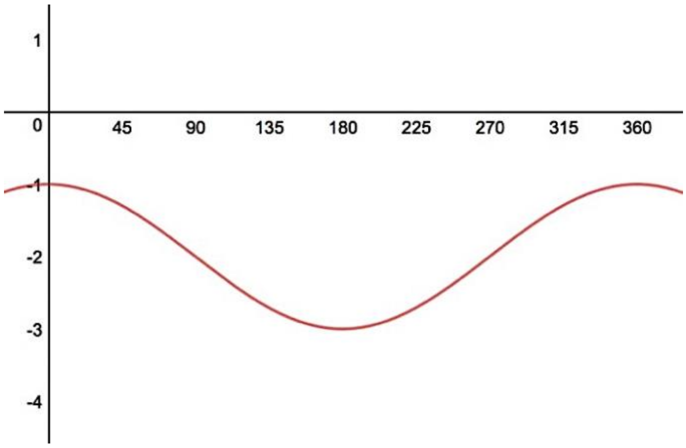
c) $a = -2$

d) $a = 3, b = 45$

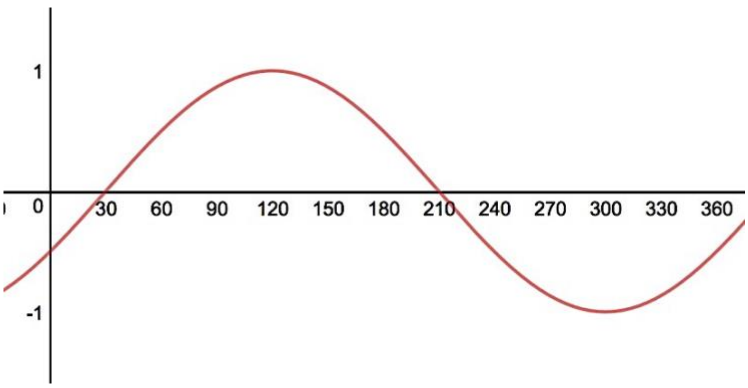
Q2) a) $y = 2\ sin\ x$



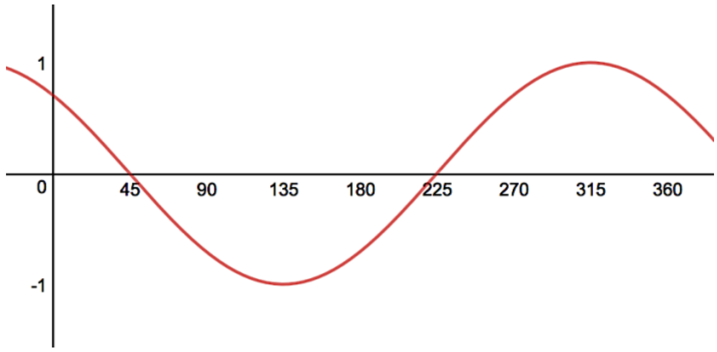
b) $y = cos\ x - 2$



c) $y = sin\ (x - 30)°$



b) $y = cos(x + 45)°$



The CAST Diagram

Q1) a) Sine is positive in quadrant 2.

b) Cosine is positive in quadrant 1.

c) Tangent is negative in quadrant 2.

d) Cosine is positive in quadrant 1.

e) Sine is negative in quadrant 4.

f) Cosine is equal to 0 at 90° - this is best seen on the graph of $y = Cos\ x$.

Q2) a) Sine is positive in quadrant 1.

b) Cosine is negative in quadrant 2.

c) Tangent is negative in quadrant 2.

d) Cosine is positive in quadrant 1.

e) Sine is negative in quadrant 4.

f) Cosine is positive in quadrant 1.

Q3) a) Sine is positive in quadrant 1.

b) Cosine is negative in quadrant 2.

c) Tangent is positive in quadrant 3.

d) Cosine is negative in quadrant 1.

e) Sine is positive in quadrant 2.

f) Cosine is positive in quadrant 4.