6A Reciprocal Trigonometric Functions

1. Will cosec(200) be positive or negative?

2. Find the value of:

a) sec(280)

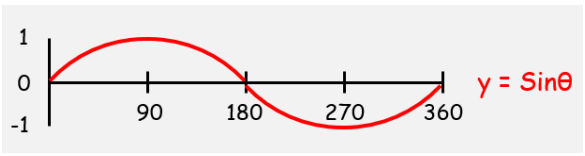
b) cot(115)

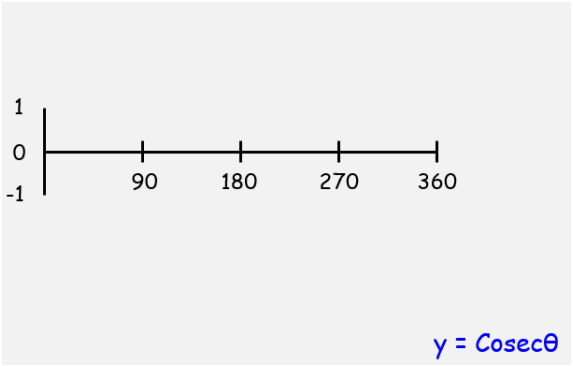
3. Work out the exact value of:

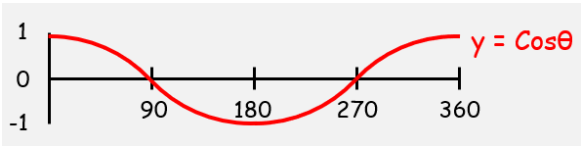
a) sec(210)

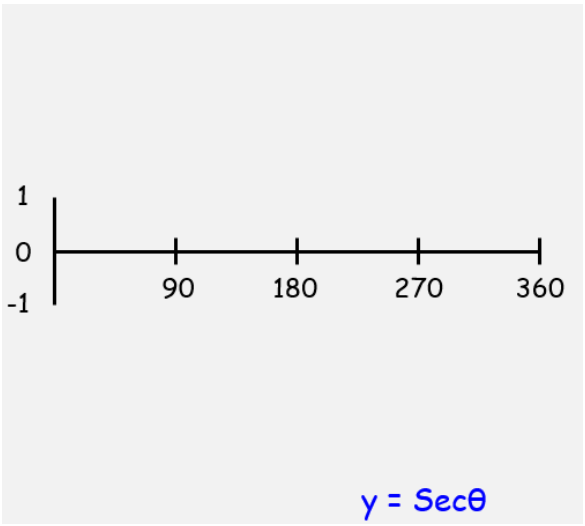
b) $cosec\ (\frac{3\pi}{4})$

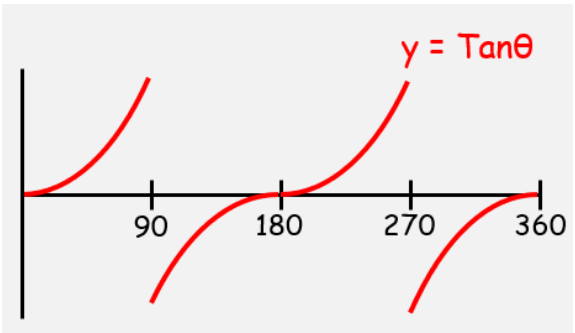
6B Reciprocal Trigonometric Graphs

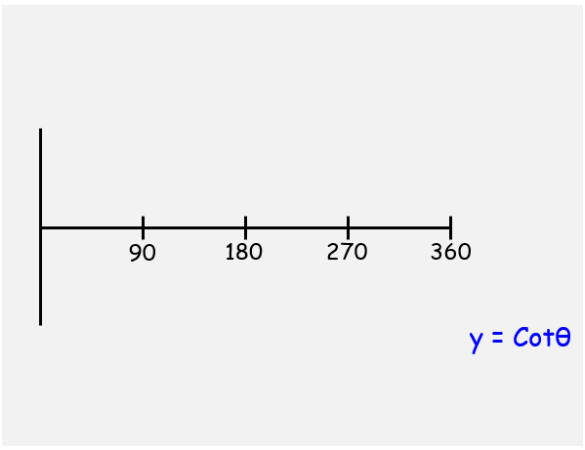






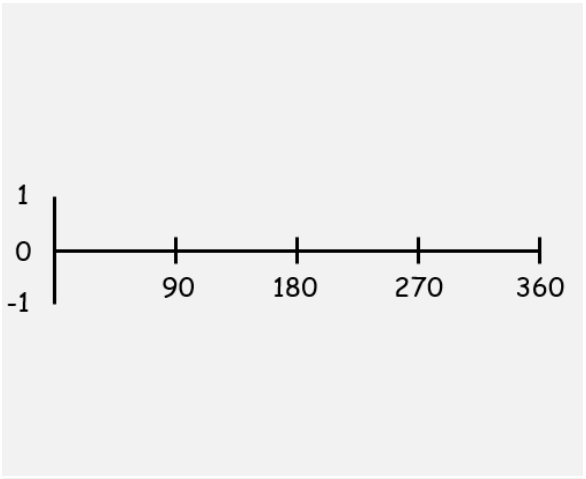


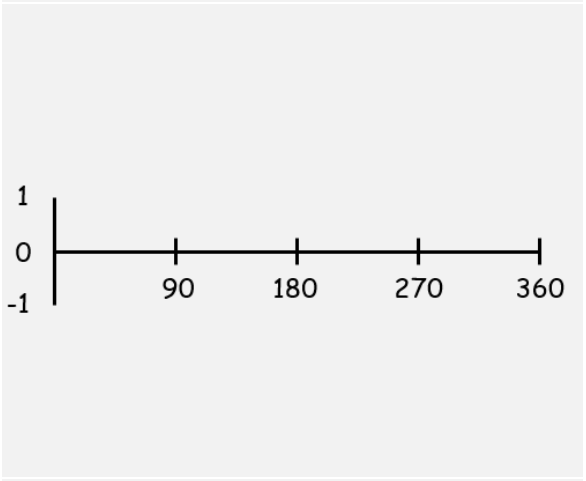


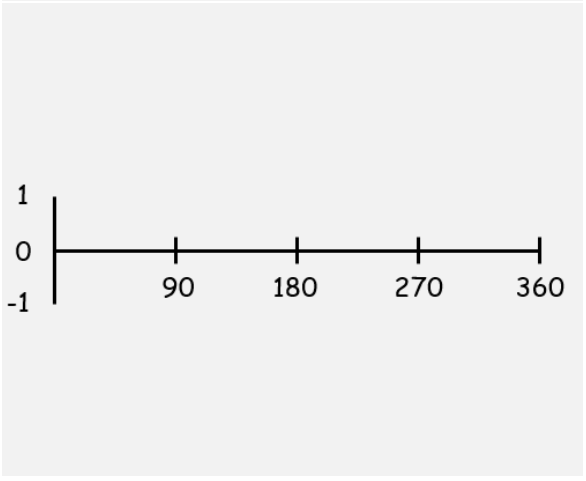


1. Sketch, in the interval $0 \leq \theta \leq 360$, the graph of:

$$y = 1 + \sec(2\theta)$$

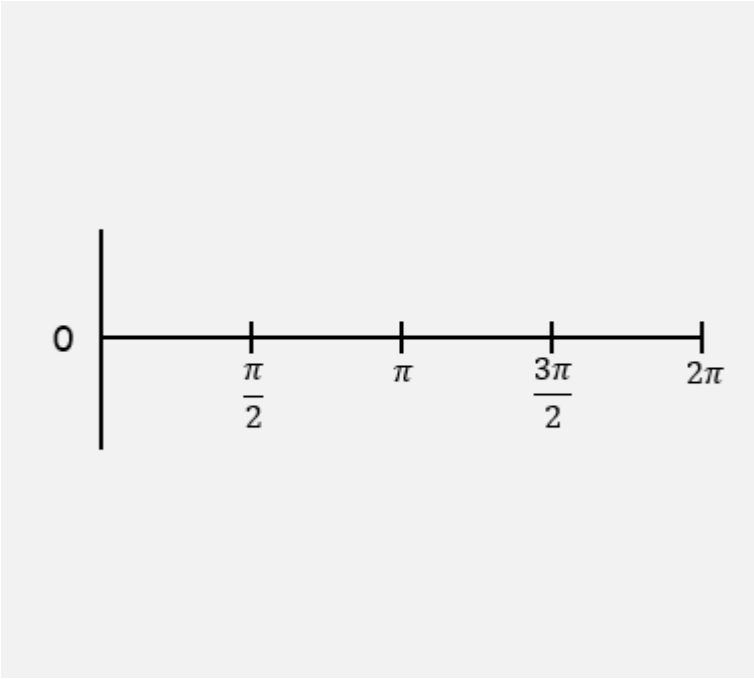


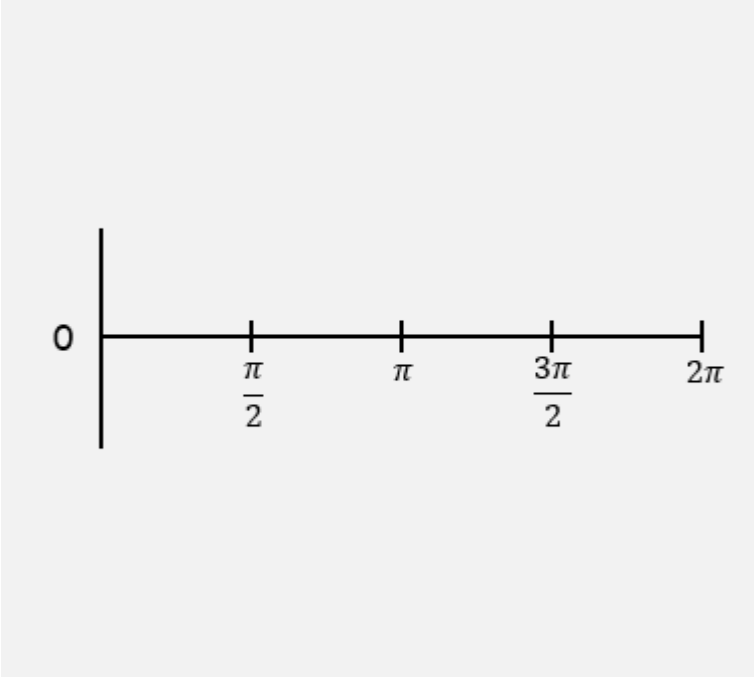




2. Sketch the graph of:

a) $y = 4cosecx,\ 0 \leq x \leq 2\pi$





b) On the same axes, sketch the line $y = x$

c) State the number of solutions to the equation:

$$4cosecx - x = 0 \qquad 0 \leq x \leq 2\pi$$

6C Part 1 Simplifying Expressions

1. simplify

a) $\sin\theta \cot\theta \sec\theta$

b) $\sin\theta \cos\theta \ (sec\theta + cosec\theta)$

c) $\frac{cot\theta\ cosec\theta)}{\sec^2\theta+cosec^2\theta} \equiv cos^3\theta$

6C Part 2 Solving Equations

2. Solve the equation

d) $\sec\theta = -2.5 \; in \; the \; range \; 0 \leq \theta \leq 360$

e) $\cot 2\theta = 0.6 \; in \; the \; range \; 0 \leq \theta \leq 360$

f) $3\mathrm{cosec}\theta = 2sec\theta \; in \; the \; range \; 0 \leq \theta \leq 360$

6D Part 1 Exact Trig Values

3. Given that

$$\tan A = -\frac{5}{12}$$

and A is obtuse, find the exact value of

a) secA

b) cosecA

4. Given that

$$cotB = \frac{7}{24}$$

and B is reflex, find the exact value of

a) secB

b) cosecB

6D Part 2 Reciprocal Trigonometric Identities

1. Prove that

$$cosec^4\theta - cot^4\theta \equiv \frac{1 + cos^2\theta}{1 - cos^2\theta}$$

2. Prove that

$$sec^2\theta - cos^2\theta \equiv sin^2\theta(1 + sec^2\theta)$$

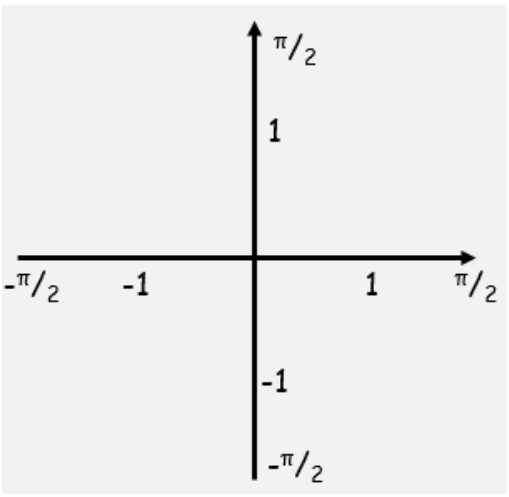
3. Solve the equation

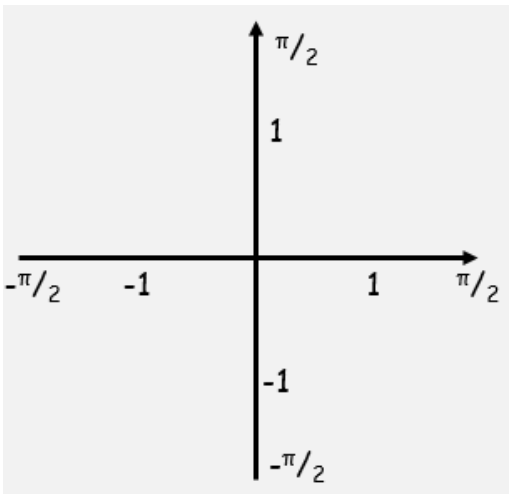
$$4cosec^2\theta - 9 \equiv cot\theta$$

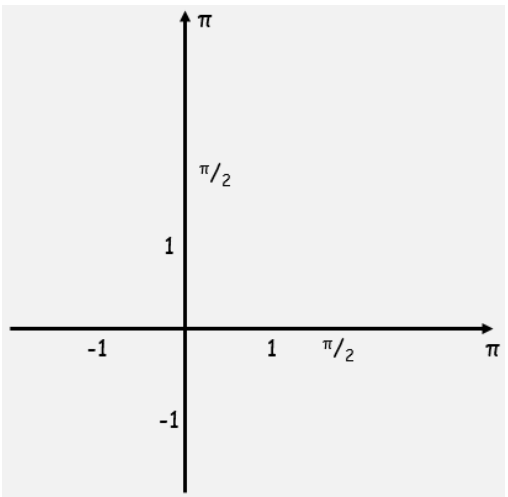
in the interval

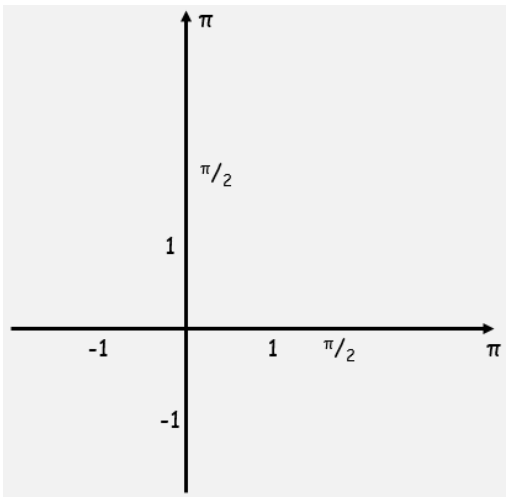
$$0 \leq \theta \leq 360$$

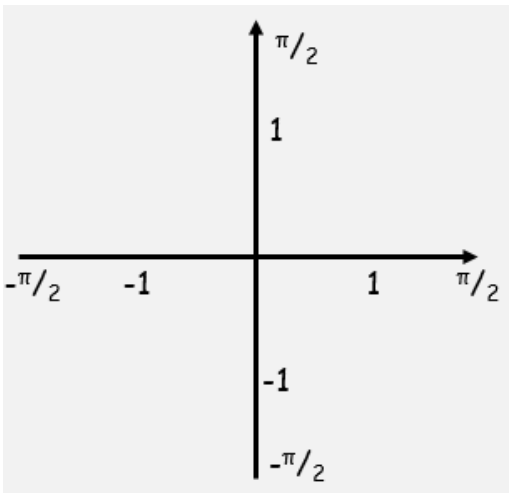
6E Inverse Trigonometric Functions

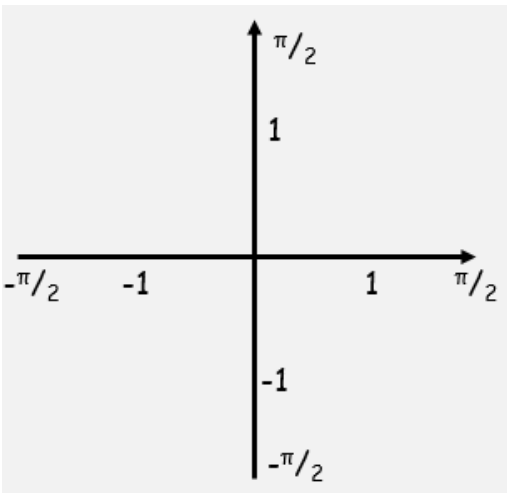












1. Work out, in radians, the value of:

a) arcsin(0.5)

b) arctan($\sqrt{3}$)

c) arcsin($-\frac{\sqrt{2}}{2}$)

d) cos[arcsin(-1)]