

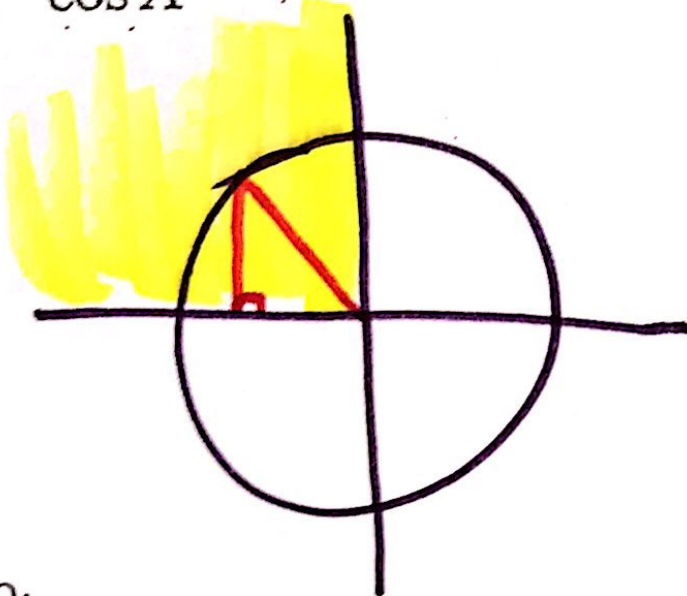
Mock Test 3.1, Version 5

ONE:

Given that $\sin A = \frac{2}{5}$ and $\frac{\pi}{2} \leq A \leq \pi$, find:

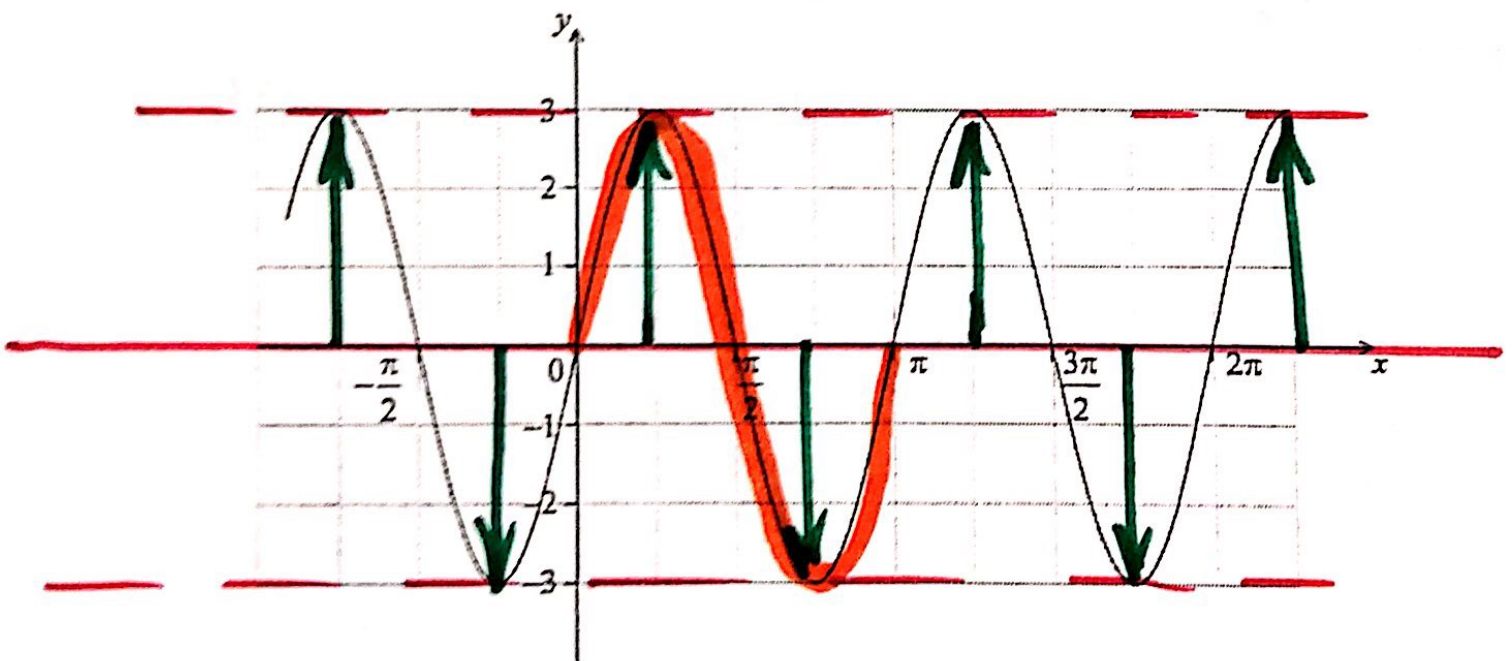
a $\cos A$

b $\tan A$



TWO:

Let $f(x) = a \sin bx$, where $b > 0$. The following diagram shows part of the graph of f .



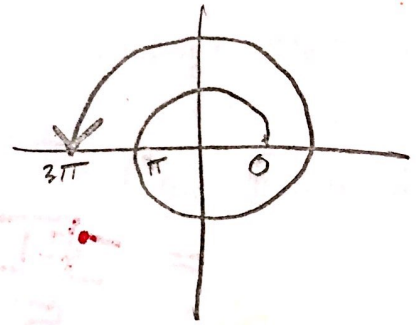
- (a) (i) Find the period of f .
- (ii) Write down the amplitude of f .
- (b) (i) Write down the value of a .
- (ii) Find the value of b .

Moderate

THREE:

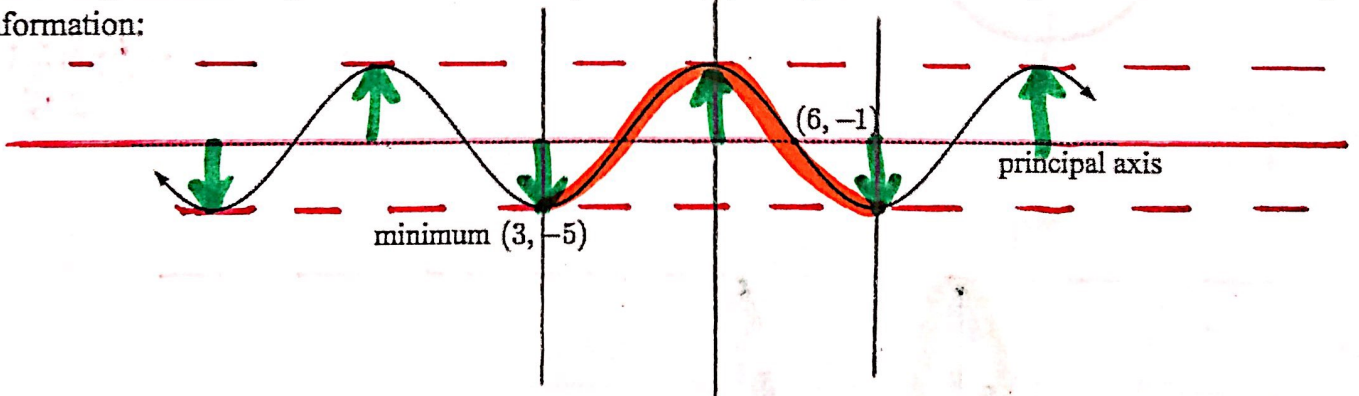
Solve the equation $2 \cos x = \sin 2x$, for $0 \leq x \leq 3\pi$.

$$2 \cos x = 2 \sin x \cos x$$



FOUR:

Find a trigonometric equation in the form $y = a \sin(b(x-c)) + d$ which represents the following information:



a Suppose $\frac{1 - \cos 2\theta}{\sin 2\theta} = \sqrt{3}$ where $0 < \theta < \frac{\pi}{2}$.

i Show that $\tan \theta = \sqrt{3}$ also.

ii Find θ .

b If $\cos 2x = 2 \cos x$, find the value of $\cos x$.

$$\frac{1 - (\cos^2 - \sin^2)}{2 \sin \cos}$$

OR

$$\frac{1 - (2\cos^2 - 1)}{2 \sin \cos}$$

OR

$$\frac{1 - (1 - 2\sin^2)}{2 \sin \cos}$$

High Challenge

FIVE:

a Suppose $\frac{1 - \cos 2\theta}{\sin 2\theta} = \sqrt{3}$ where $0 < \theta < \frac{\pi}{2}$.

i Show that $\tan \theta = \sqrt{3}$ also.

ii Find θ .

b If $\cos 2x = 2 \cos x$, find the value of $\cos x$.

$$2 \cos^2 x - 1 = 2 \cos x$$

$$2 \cos^2 x - 2 \cos x - 1 = 0$$

$$2A^2 - 2A - 1 = 0$$

QUAD FORMULA

$$\cos x = A \quad \leftarrow \text{NEW VARIABLE}$$