

Please attempt the following questions in preparation for the online session on 23<sup>rd</sup> March.

Q1

Solve  $5\cos(3x - 20)^\circ - 2 = 0$ ,  $0 \leq x < 360$

Q2

Solve  $(4\sin x - \sqrt{5})(\sin x + 1) = 0$  in the interval  $0 \leq x \leq 2\pi$

Q3

Show that  $\sin 2x \tan x = 1 - \cos 2x$ , where  $\frac{\pi}{2} < x < \frac{3\pi}{2}$ .

Q4

Given that  $\sin x = k$ , where  $0 \leq x \leq \frac{\pi}{2}$ ,  
Find an expression for  $\sin 2x$ .

Q5

If  $\cos 2x = \frac{7}{25}$  and  $0 < x < \frac{\pi}{2}$ , find the exact values of  $\cos x$  and  $\sin x$ .

Q6

Triangle ABD is right-angled at B with angles  $BAC = p$  and  $BAD = q$  and lengths as shown in the diagram.

Show that the exact value of  $\cos(q - p)$  is  $\frac{19\sqrt{17}}{85}$ .

Q7

(a) Express  $15\cos x^\circ - 8\sin x^\circ$  as  $k \cos(x + a)^\circ$ , where  $k > 0$  and  $0 \leq x \leq 360$ .

(b) Hence state the maximum and minimum values of  $15\cos x^\circ - 8\sin x^\circ$  and the corresponding values of  $x$  in the interval  $0 \leq x \leq 360$

Q8

(a) Express  $\sin x - \sqrt{3}\cos x$  in the form  $k\sin(x - \alpha)$  where  $k > 0$  and  $0 \leq \alpha \leq 2\pi$ .

(b) Hence or otherwise, sketch the curve with equation  
in the interval  $0 \leq x \leq 2\pi$

Q9

What is the equation of the graph below?

