Test 8 : Trig functions[50]
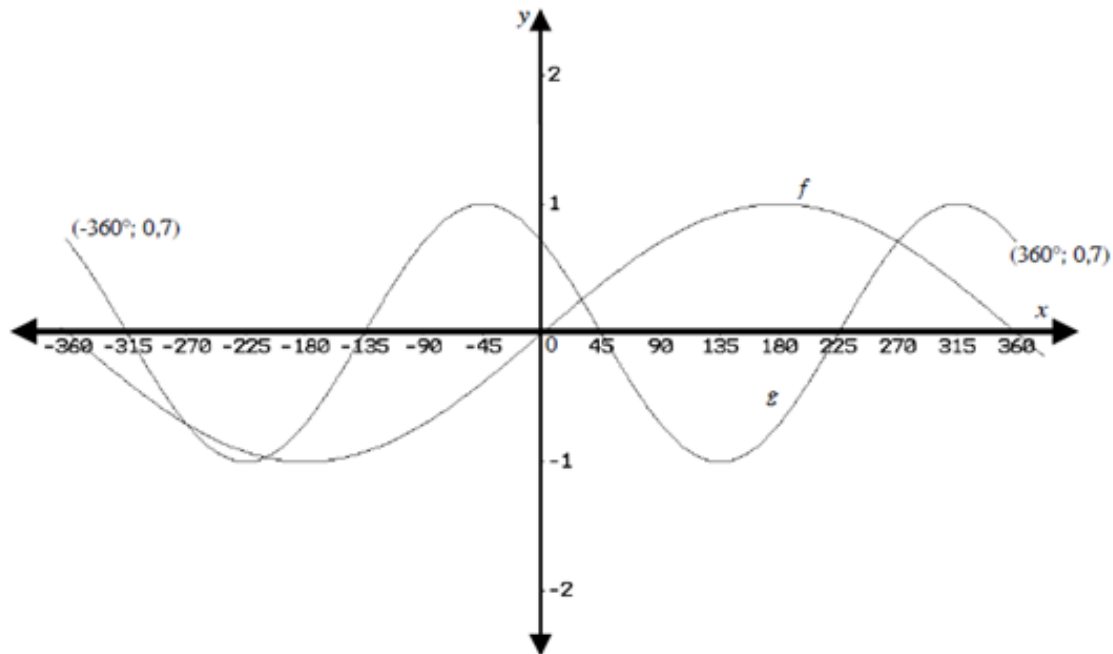### Question 1
1.1   Given: $f(x) = 2cosx$ and $g(x) = tan2x$

1.1.1   Write down the amplitude and the period of f and g.   (4)

1.1.2   Sketch the graphs of f and g on the same system of axes for the
         interval $-90^0 \leq x \leq 90^0$ (8)

1.1.3   Write down the period of $f\left(\frac{x}{2}\right)$ (2)

1.1.4   Determine the asymptotes of $g(x - 25^0)$ (2)

1.2   The diagram shows the graphs of $f(x) = a.sinbx$ and $g(x) = \cos(x + p)$

1.2.1   Determine the values of a, b and p   (6)

1.2.2   Write down the period of f.   (2)

1.2.3   Write down the range of $h(x)$ if $h(x) = g(x) - 1$ (2)

                                                         [26]

Question 2

2.1   Draw the graphs of $f(x) = \sin(2x - 90°)$ and $g(x) = -\tan x$, for $x \, \varepsilon \, [\text{-}180°\,; 180°]$ on
     the same system of axes   (6)

2.2   Given the functions: $f(x) = \cos 2x$ and $g(x) = \sin(x + 30^0)$

2.2.1   Solve the equation $\cos 2x = \sin(x + 30^0)$ for $x \in \left[-180^0\,;180^0\right]$ (6)

2.2.2   Sketch graphs of $f(x) = \cos 2x$ and $g(x) = \sin(x + 30^0)$ on the same system of
         axes for $x \in \left[-180^0\,;180^0\right]$. Show the co-ordinates of all points of intersection with
         the axes, all turning points and all points at which $f(x) = g(x)$ (8)

2.2.3   State the range of f if the graph of f undergoes a positive, vertical shift of 1 unit.   (2)

2.2.3   Write down the new equation of g if it is shifted 60° horizontally to the left.   (2)

                                                                              [24]