XT - MATHS Grade 11

Name: _____ **Class:** _____

Subject: Trigonometry 2: Graphs **Date:** _____

Total Marks: 41

Question 1: True/False [2] Mathematics - LO 2 : AS 2

The graph of $y = \cos x$ is to be reflected in the y-axis.
The equation of the new graph will be unchanged from the original.

TRUE **FALSE**

Questions 2 to 3 refer to the following graphic

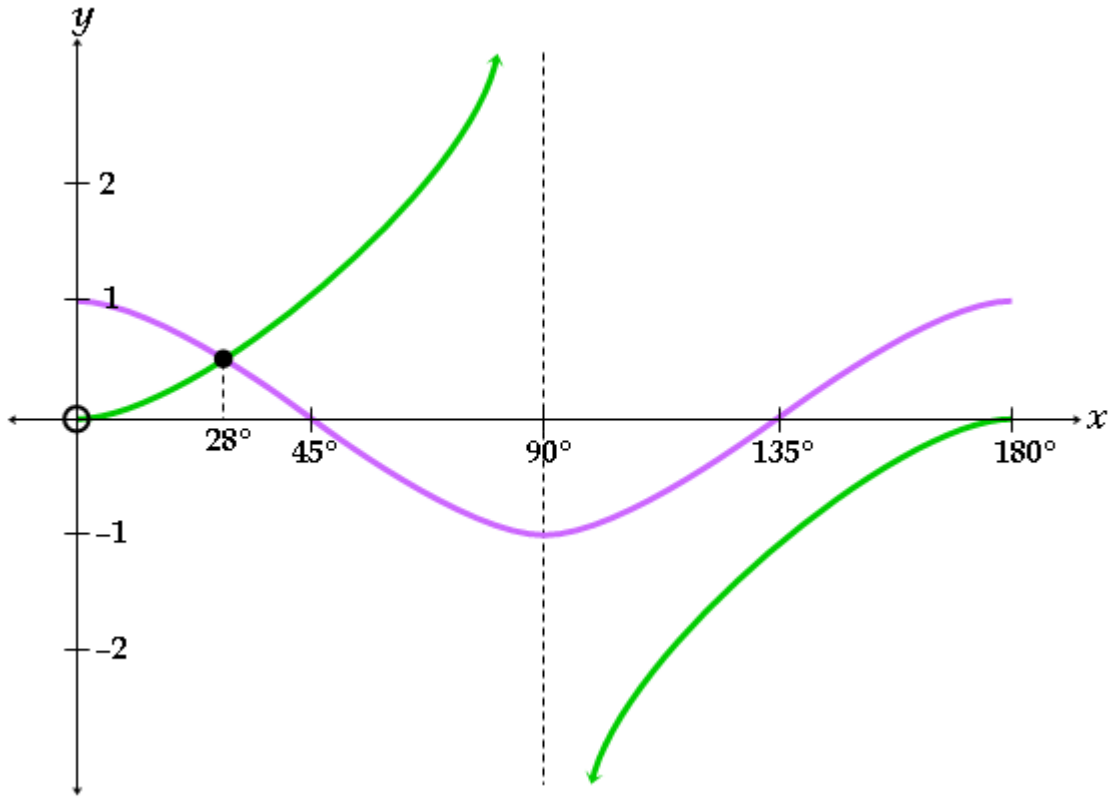

Figure 1: 4333

Question 2: True/False [2] Mathematics - LO 2 : AS 2

Given graph: $y = \tan x$ and $y = \cos 2x$ for $x \in [0°; 180°]$

If the graphs were extended for $x \in [0°; 360°]$ the next point of intersection would be at $x = 208°$.

TRUE **FALSE**

Question 3: Multiple Choice [4] Mathematics - LO 2 : AS 2

Given graph : $y = \tan x$ and $y = \cos 2x$ for $x \in [0°; 180°]$

The values of x for which $\tan x . \cos 2x < 0$ are ...

A $(45°; 90°)$ and $(135°; 180°)$

B $(28°; 90°)$ and $(135°; 180°)$

C $(0°; 28°]$

D $[45°; 90°)$ and $(90°; 180°]$

E $(45°; 180°)$

Question 4: True/False [2] Mathematics - LO 2 : AS 2

The function $y = a \tan bx$ is given with $b > 0$.

If the lines $x = -30°$ and $x = 30°$ are asymptotes of this function, then the value of b will be $\frac{1}{3}$.

TRUE **FALSE**

Question 5 refers to the following graphic

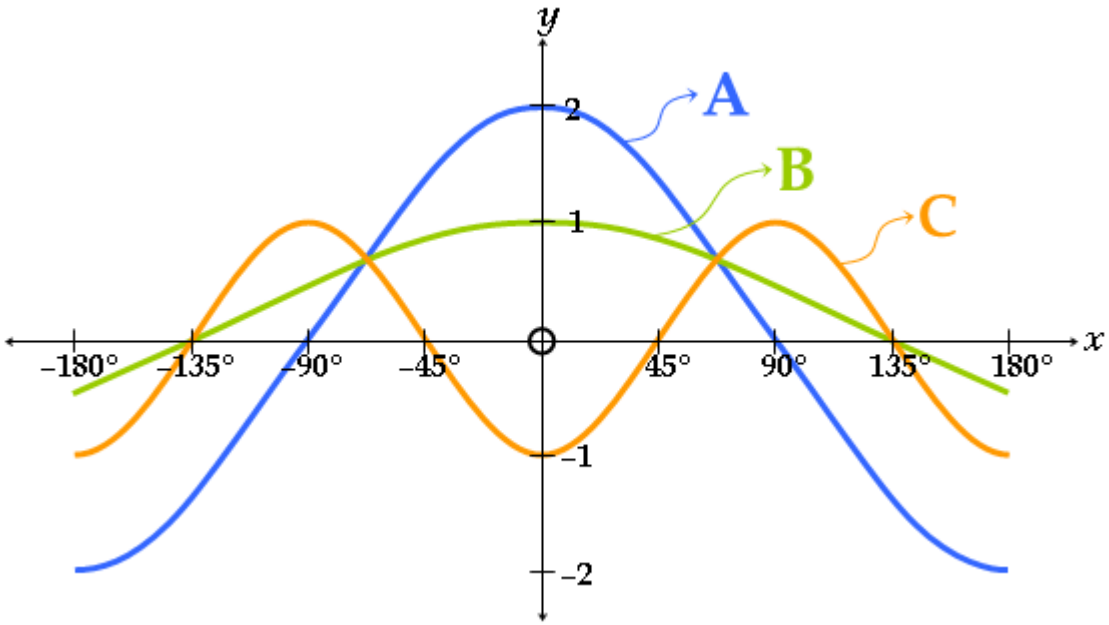

Figure 2: 11-0006

Question 5: Multiple Choice [2]

Mathematics - LO 2 : AS 2

Three cosine graphs have been sketched for $-180° \leq x \leq 180°$.
The graph with the greatest period is ...

A **A**

B **B**

C **C**

Question 6 refers to the following graphic

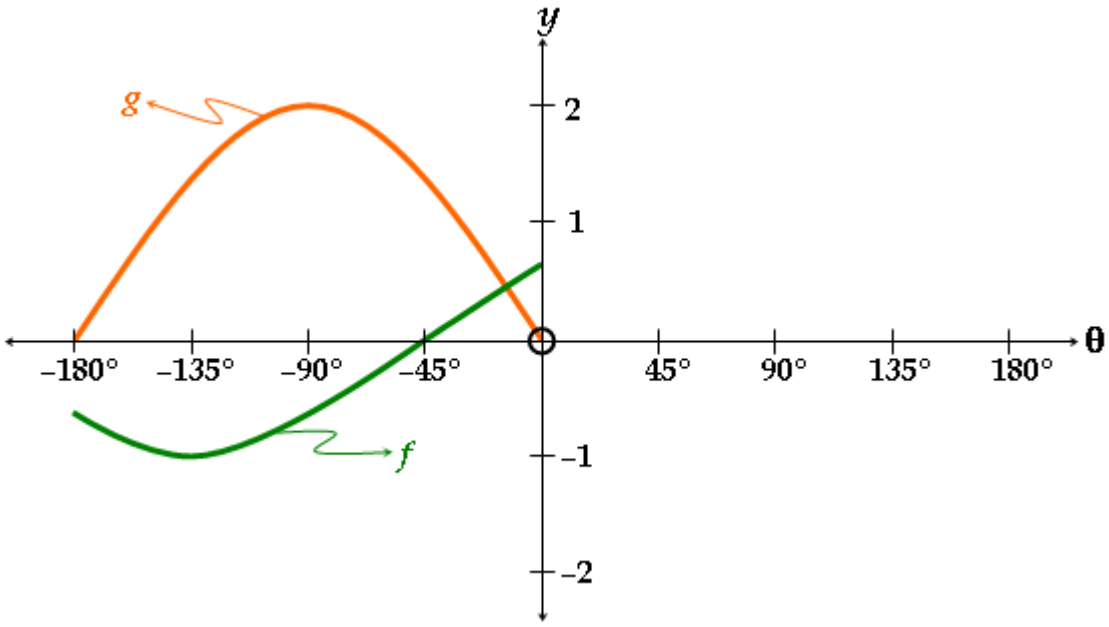

Figure 3: 4334

Question 6: Multiple Choice [3]

Mathematics - LO 2 : AS 2

$f : y = a\cos(\theta + b)$

$g : y = c\sin\theta$

The sketch graphs of the above equations are given for $[-180°; 0°]$.

The values of a, b and c are therefore ...

A	$a = 1;\ c = -2;\ b = 45°$
B	$a = -1;\ c = -2;\ b = -45°$
C	$a = 1;\ c = -2;\ b = -45°$
D	$a = 1;\ c = 2;\ b = 45°$
E	$a = 1;\ b = -2;\ c = 45°$

Question 7: Multiple Choice [2]

Mathematics - LO 2 : AS 2

Given : $y = \frac{12}{10}\sin 2x$ for $0° \leq x \leq 90°$

The value of x when the maximum height achieved by the graph of this equation is ...

A	$\frac{12}{10}$
B	$90°$
C	$45°$
D	1
E	2

Question 8 refers to the following graphic

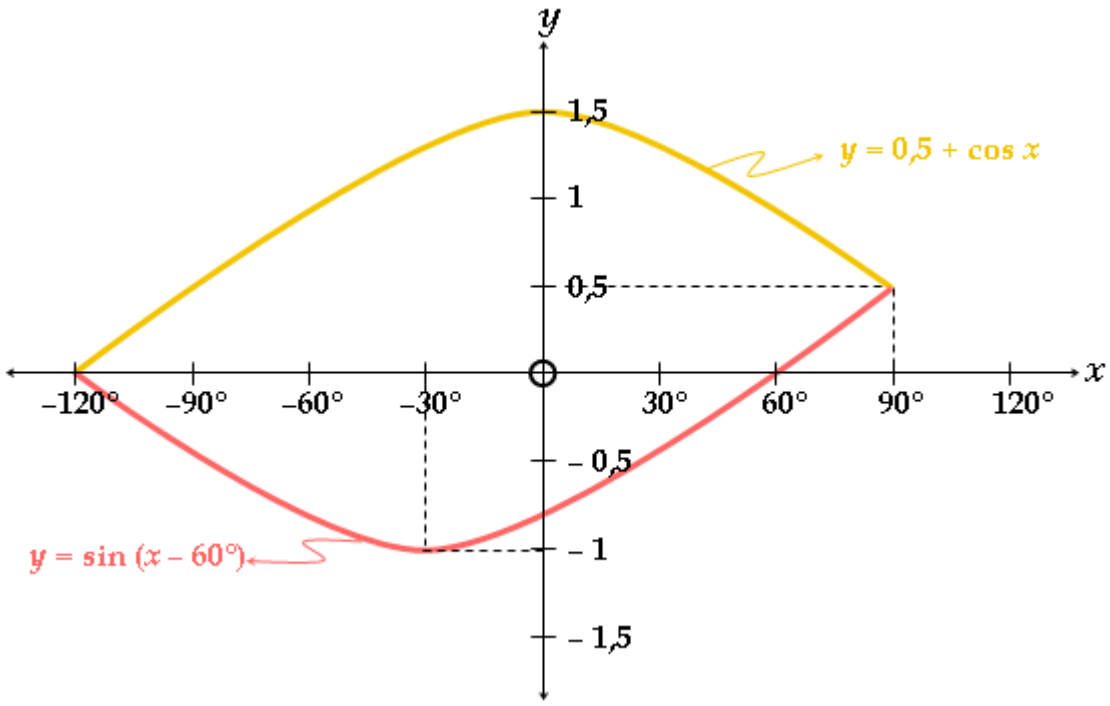

Figure 4: 4326

Question 8: Socrates [2]

Mathematics - LO 2 : AS 2

Given : $y = \sin(x - 60°)$ and $y = 0,5 + \cos x$ for $x \in [-120°;\ 90°]$

The interval of x for which $\left(\sin(x - 60°)\right)\left(0,5 + \cos x\right) > 0$ is ...

[Give your answer in the form (a; b).]

Question 9: Socrates [2]

Wiskunde - LU 2 : AS 2

If the graph of the equation $y = 2\cos(x + 30°)$ is moved $30°$ right, the new graph will be represented by the equation ...

Question 10: Socrates [2] Mathematics - LO 2 : AS 2

The graph of the equation $y = \cos(x + 45°)$ is moved $30°$ to the right.

The new graph will then represent the equation ...

Question 11: Socrates [2]

The x-intercepts of the function $y = \cos(x - 60°)$ with $-180° \leq x \leq 180°$ are ...

[Give the roots and separate them with a semi-colon, e.g. 45° ; 60°.)

Question 12 refers to the following graphic

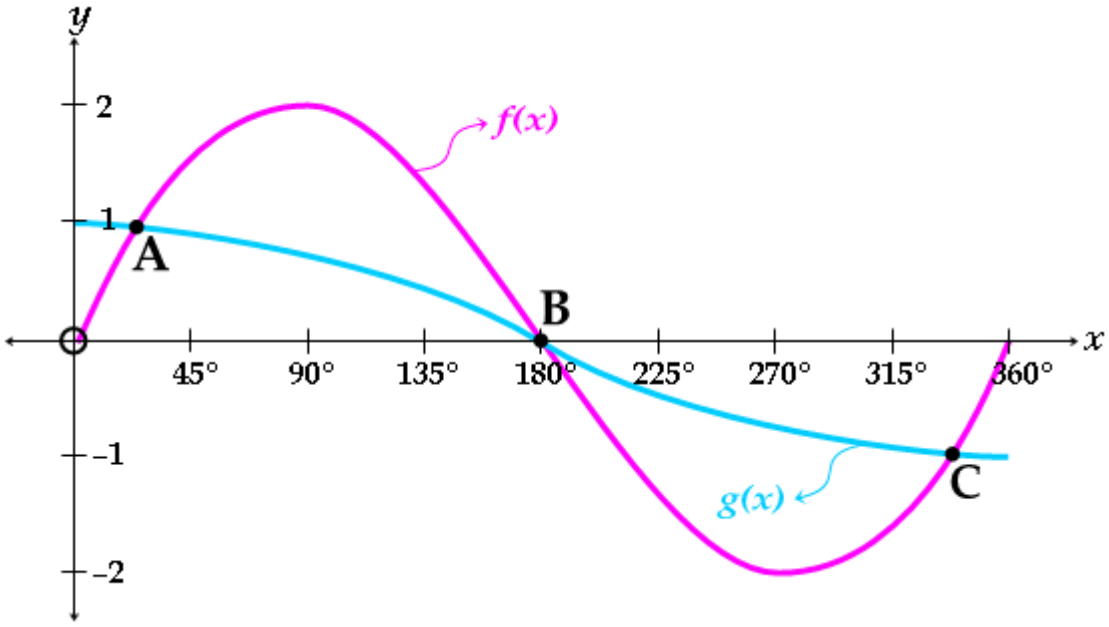

Figure 5: 11-0007

Question 12: Cloze [4] Mathematics - LO 2 : AS 2

The graphs of $f(x) = 2\sin x$ and $g(x) = \cos\left(\frac{1}{2}x\right)$ have been sketched for the interval $0° \leq x \leq 360°$.

The graphs intersect at $A(29°;\ 0,96)$, B and C.

The coordinates of B are (Ans. 1).
The coordinates of C are (Ans. 2).

1		2	

- $(90°;\ 0)$
- $(180°;\ 0)$
- $(-29°;\ -0,96)$
- $(331°;\ -0,96)$
- $(331°;\ 0,96)$
- $(299°;\ -0,96)$
- $90°$
- $180°$

Questions 13 to 14 refer to the following graphic

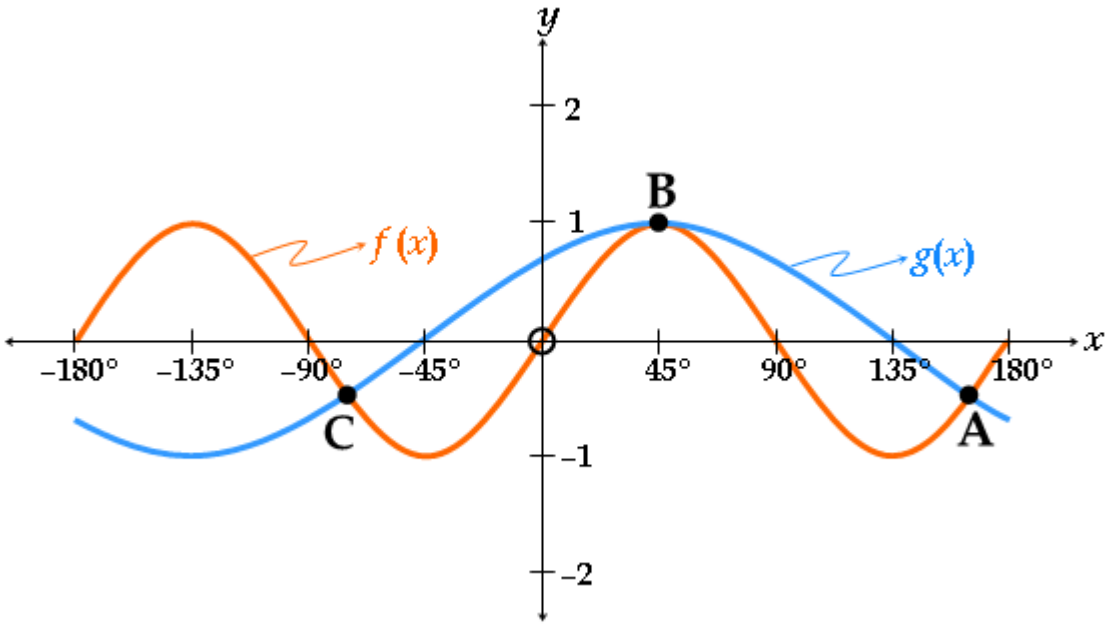

Figure 6: 11-0009

Question 13: Cloze [4] Mathematics - LO 2 : AS 2

The graphs of $f(x) = \sin 2x$ and $g(x) = \cos(x - 45°)$ have been sketched for the interval $-180° \le x \le 180°$.

The graphs intersect at **A** $(165°;\ -0{,}5)$, **B** and **C**.

The coordinates of **B** are (Ans. 1).
The coordinates of **C** are (Ans. 2).

1		2	

- $(90°;\ 1)$
- $(45°;\ 1)$
- $(-75°;\ -0{,}5)$
- $(-120°;\ -0{,}5)$
- $(-165°;\ -0{,}5)$
- $(-155°;\ -0{,}5)$
- $90°$
- $45°$

Question 14: Cloze [4] Mathematics - LO 2 : AS 2

The graphs of $f(x) = \sin 2x$ and $g(x) = \cos(x - 45°)$ have been sketched for the interval $-180° \le x \le 180°$.

The graphs intersect at **A**, **B** $(45°;\ 1)$ and **C**.

At **B** a common tangent can be drawn to both curves.
The equation of the tangent is (Ans. 1).
The y-coordinates of the endpoints of $g(x)$ is (Ans. 2).

1		2	

- $x = 1$
- $y = 1$
- $y = 45°$
- $x = 45°$
- $-0{,}71$
- $0{,}71$
- $-0{,}5$
- $0{,}5$

Question 15: Cloze [4]

Given for $x \in [-180°;\ 180°]$: $h(x) = \cos x - 2$

$g(x) = \tan 3x$

$t(x) = \sin(x + 30°)$

The period of g will then be (Ans. 1), while the maximum height of h is reached if $x =$ (Ans. 2).

If the graph of t is shifted (Ans. 3), the equation of t will change to $y = \cos x$.

1	
2	
3	

- $0°$
- $60°$
- $90°$
- $120°$
- $360°$
- $60°$ to the left
- $60°$ to the right
- $120°$ to the left
- $120°$ to the right

15 Questions, 8 Pages