

Mathematics Chapter Test

Topic : Trigonometric Relations

Form : 3

Time allowed : 30 minutes

Total marks: 33 marks

Class : _____ Name : _____ (Class No. : _____) Total:(_____/33)

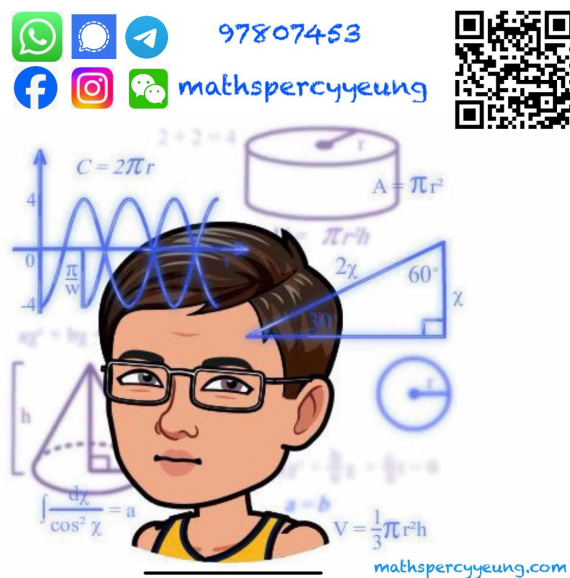
(In this test, do not use a calculator and any unknown angle stands for an acute angle. Leave the answers in surd form if necessary.)

A. Short questions (29 marks)

1. Given that $\tan \theta = \frac{3}{5}$, find the value of $\frac{\sin^2 \theta - 2}{\cos^2 \theta + 3}$.

(4 marks)

2. (a) Simplify $2025 \cos^2(90^\circ - \theta) + 2025 \sin^2(90^\circ - \theta)$.
 (b) Simplify $\frac{(2 - 2 \sin \theta)(2 + 2 \sin \theta)}{\sin^2(90^\circ - \theta)}$.



(4 marks)

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3. Find the value of the following expressions.

(a) $\tan 34^\circ \cos 56^\circ - \sin 56^\circ$.

Q3 is cancelled

(b) $\frac{(2 - 2 \sin \theta)(2 + 2 \sin \theta)}{\sin^2 (90^\circ - \theta)}$.

(4 marks)

4. (a) Simplify $\cos(90^\circ - \theta) \sin(90^\circ - \theta) \tan(90^\circ - \theta) - 1$.

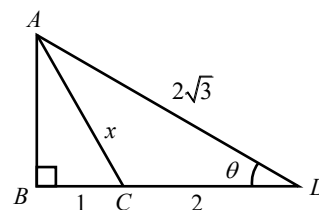
(b) Hence, solve $\frac{\cos(90^\circ - \theta) \sin(90^\circ - \theta) \tan(90^\circ - \theta) - 1}{\sin \theta} = -\frac{\tan 60^\circ}{2}$.

(6 marks)

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5. In the figure, BCD is a straight line. $AB \perp BD$, $AD = 2\sqrt{3}$, $BC = 1$ and $CD = 2$.

- (a) Find θ .
(b) Find x .



(5 marks)

6. (a) Simplify $\frac{\sin(90^\circ - \theta)}{1 + \tan \theta} \times \left(\frac{1}{\cos(90^\circ - \theta)} + \frac{1}{\sin(90^\circ - \theta)} \right)$.
(b) Hence, solve $\frac{\sin(90^\circ - \theta)}{1 + \tan \theta} \times \left(\frac{1}{\cos(90^\circ - \theta)} + \frac{1}{\sin(90^\circ - \theta)} \right) = \tan 28^\circ$.

(6 marks)

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B. Multiple-choice questions (4 marks)

7. If x and y are acute angles such that $x + y = 90^\circ$, which of the following must be true?

I. $\frac{2}{\tan(90^\circ - x)} \cdot \frac{2}{\tan(90^\circ - y)} = 4$

II. $\sin x = \cos y$

III. $\sin^2 x + \cos^2 y = 1$.

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

8. If $\tan(90^\circ - \theta) = \frac{y}{x}$ and $0^\circ < \theta < 90^\circ$, then $(\sin \theta - \cos \theta)^2 =$

A. $\frac{x - y}{x + y}$.

B. $\frac{1 - 2xy}{x^2 + y^2}$.

C. $\frac{(x - y)^2}{x^2 + y^2}$.

D. $\frac{x^2 - y^2}{x^2 + y^2}$.

MC ANS

7. _____

8. _____