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VCE Specialist Mathematics ½

Trigonometry II [3.2]

Test

22 Marks. 1 Minute Reading. 18 Minutes Writing.

Results:

Test Questions	_____ / 22

Section A: Test Questions (22 Marks)

Question 1 (4 marks)

Tick whether the following statements are **true** or **false**.

	True	False
a. On the unit circle, the value of sin is represented by the y-value of the unit circle whereas the value of tan is represented by the gradient of the projection.		
b. If you change the value of x by the period in a sin function, the angle changes by 2π.		
c. For a particular solution, the trigonometric equation must have a restricted domain.		
d. $\tan(7\pi + \theta) = \tan(\theta)$.		
e. For sin and cos functions, the amplitude is always the **coefficient** of sin and cos.		
f. We should start sketching the function when the angle is equal to 0.		
g. The y-value of the inflexion of the tangent graph is always given by the vertical translation of the function.		
h. To find the vertical asymptote of any tangent function, we simply let the angle equal to $\frac{\pi}{2}$.		

Space for Personal Notes

Question 2 (3 marks)

It is known that $\cos(a) = -\frac{1}{5}$ where a is a third quadrant angle.

Evaluate the following:

a. $\cos(\pi + a)$. (1 mark)

b. $\sin(\pi + a)$. (2 marks)

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Question 3 (5 marks)

Consider the equation below.

$$-2\cos\left(2x+\frac{\pi}{6}\right)+1=0$$

a. Solve for the value(s) of x. (4 marks)

b. Solve for the value(s) of x where $x \in [0,2\pi]$. (1 mark)

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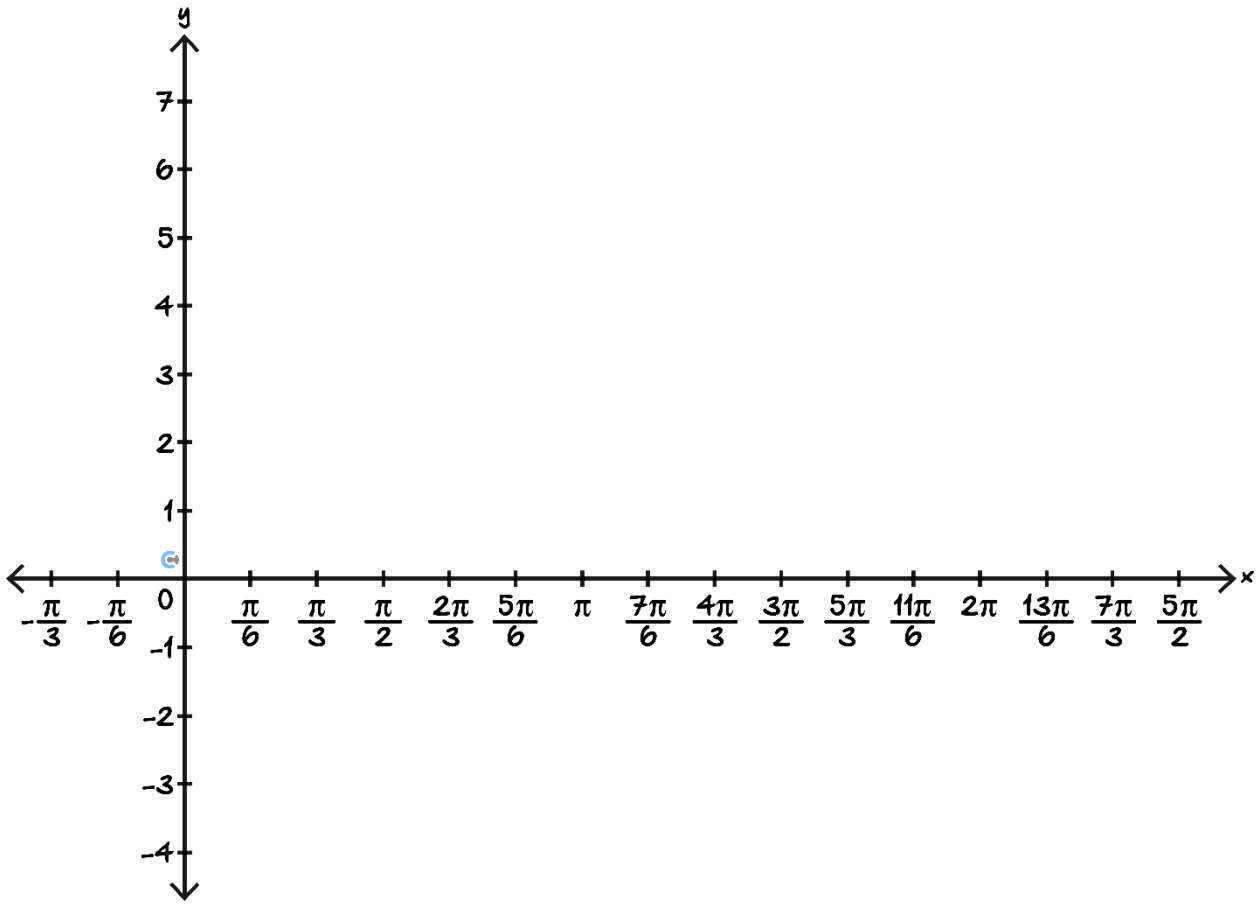
Question 4 (3 marks)

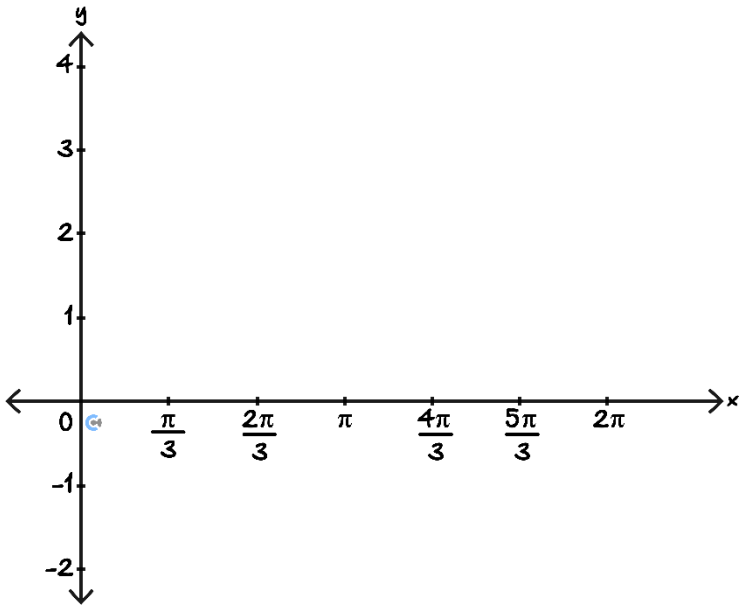
Sketch the graph of $f(x) = 2\tan\left(x - \frac{\pi}{6}\right) + 2$ for $x \in [0, 2\pi]$ on the axes below, labelling all asymptotes, intercepts, and endpoints with their coordinates.



Space for Personal Notes

Question 5 (7 marks)

a. Sketch the graph of $f(x) = 2\cos\left(2x + \frac{\pi}{2}\right) + 1$ for $x \in [0, 2\pi]$ on the axes below, labelling all intercepts and endpoints with their coordinates. (3 marks)



b. Solve $f(x) = 2$ for $x \in [0, 2\pi]$. (3 marks)

c. Hence, solve $f(x) \geq 2$ for $x \in [0, 2\pi]$. (1 mark)

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VCE Specialist Mathematics ½

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