MA TRẬN ĐỀ HKI TOÁN 11

STT	Lesson Topics	CÂU HỎI THEO MỨC ĐỘ NHẬN THỨC								Total number of questions	Total number of marks	% of questions	% of marks
		Recognise		Fluency		Problem Solving		Advanced Problem Solving/Reasoning					
		question	marks	question	marks	question	marks	question	marks				
1	5A Radian Measure	1	4							1	4	13%	10%
3	5B Arc length and sector area	0.5	2	0.5	3					1	5	13%	13%
4	5C The unit circle and the trigonometric ratios	1	2							1	2	13%	5%
6	5D Applications of the unit circle	1	3	1	5					2	8	25%	20%
7	7B The sine function	0.5	5			0.25	3	0.25	2	1	10	13%	25%
8	7E Trigonometric equations			1	4	1	7			2	11	25%	28%
Tổng cộng		4	16	2.5	12	1.25	10	0.25	2	8	40	100%	100%
Tỷ lệ câu		50.00%		31.25%		15.63%		3.13%					
Tỷ lệ điểm		40%		30%		25%		5%					

BẢNG ĐẶC TẢ MA TRẬN TOÁN 11						
			CÂU HỎI THEO MỨC ĐỘ NHẬN THỨC			
STT	ĐƠN VỊ KIẾN THỨC	CHUẨN KIẾN THỨC KỸ NĂNG CẦN KIỂM TRA	NHẬN BIẾT	THÔNG HIỂU	VẬN DỤNG	VẬN DỤNG CAO
1	5A Radian Measure	Nhận biết: – convert between radiant and degree	1			
3	5B Arc length and sector area	Nhận biết: - find arc length and sector area when radius is known Thông hiểu: – find the radius when are length or sector area is known	0.5	0.5		
4	5C The unit circle and the trigonometric ratios	Nhận biết: - find the position on the unit circlewhere the angle is known	1			
6	5D Applications of the unit circle	Nhận biết: - find the angle where trigonometry value is known Thông hiểu: - find the others trigonometry value when one is known	1	1		
7	7B The sine function	Nhận biết: - understanding the sine function Vận dụng và vận dụng cao: - state the transfomation and sketch the graph of sine function	0.5		0.25	0.25
8	7E Trigonometric equations	Thông hiểu: - solve the simple trigonometric equations Vận dụng: - solve the trigonometric equation		1	1	

Sở GD&ĐT TPHCM

Trường TH-THCS-THPT Nam Úc

Scotch AGS

ĐỀ CHÍNH THỨC/OFFICIAL EXAM

(Đề thi gồm 2 trang/The exam consists of 2 page(s))

Kiểm tra học kì 1/Final exam semester 1

Năm học: 2023 - 2024

Môn /Subject: Toán

Lớp/Year: 11

Thời gian/Time: 115 phút/minutes

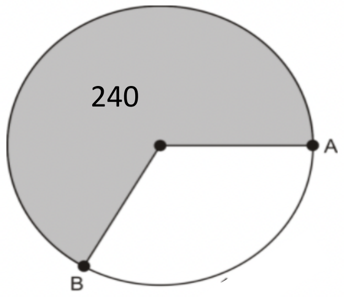
1. Convert:

   a. The angle $160°$ to simplest radians measure in terms of π . (2)

   b. The angle 10.4 radians to degrees correct to 2 decimal places. (2)

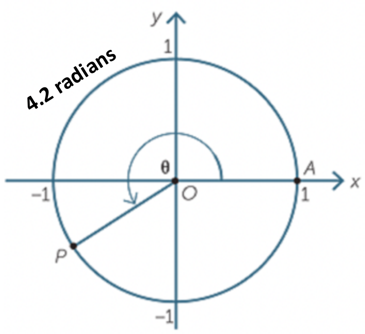
2. The **shaded sector** in the diagram provided has an area of 20π cm^2.

   a. Show that the **radius** of the sector is 5.48 cm. (3)



   b. Hence, find the **arc length** of the sector. (2)

3. **Use technology** to determine the approximate coordinates of the point P that lies on the unit circle as shown on the diagram below. Give your answer correct to 3 significant figures. (2)



4. If $tan\ \theta = -1.7$, find the possible values of θ for $0 \leq \theta \leq 360^o$. (3)

5. Given that $sin\theta = -\frac{3}{4}$and $\pi < \theta < \frac{3\pi}{2}$, find the exact value of:

   a. $cos\ \theta$ (3)

   b. $tan\ \theta$ (2)

6. Find the exact angle, x, for $0 \le x \le 2\pi$ if:

   a. $\sqrt{2}cos\, x - 1 = 0$ (3)

   b. $9tan^2x - 3 = 0$ (4)

7. Solve for x if $2sin(\frac{x}{2}) + \sqrt{3} = 0$ where $0 \le x \le 4\pi$. (4)

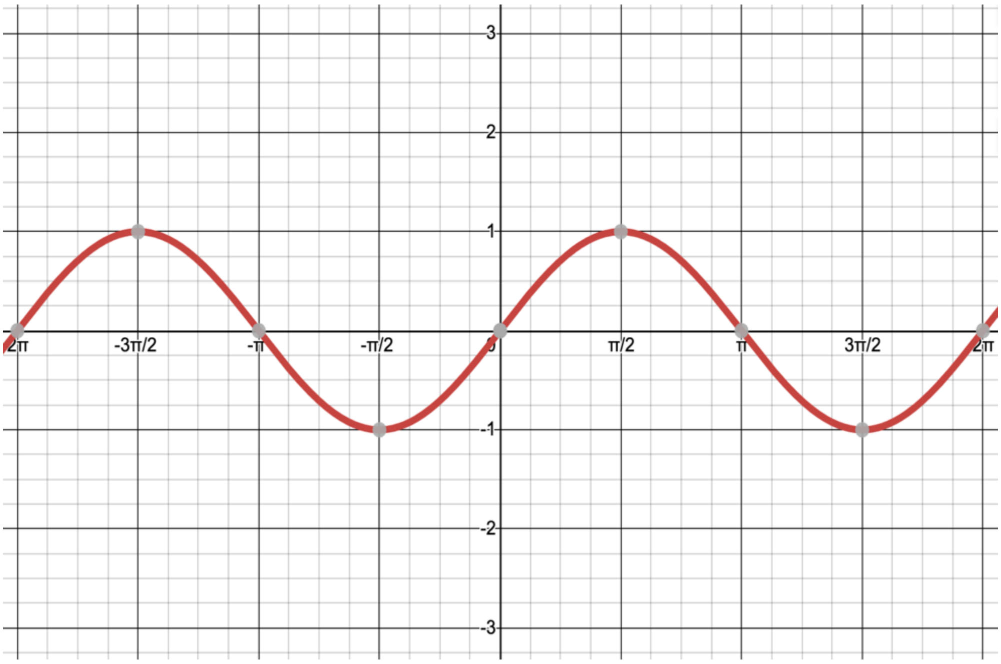
8. Consider the function $y = -2sin\left(x - \frac{\pi}{4}\right) + \frac{1}{2}$.

   a. Complete the table below. (5)

Amplitude	Period	Principal Axis	Maximum value	Minimum Value

   b. State the transformations that would map the graph of $y = sin\, x$ to $y = -2sin\left(x - \frac{\pi}{4}\right) + \frac{1}{2}$. (3)

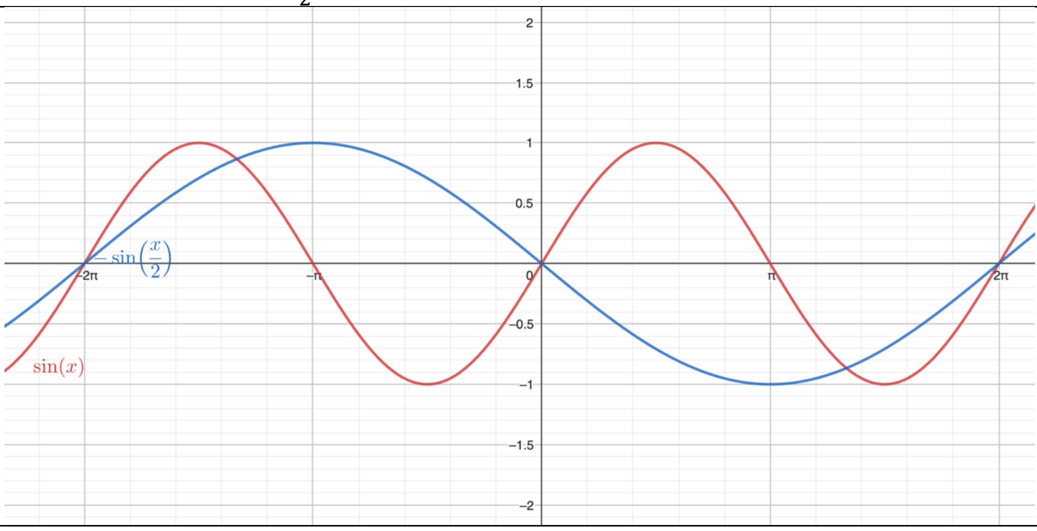
   c. Use transformation techniques to clearly map $y = sin\, x$ to $y = -sin\left(\frac{x}{2}\right)$. Copy the graphs to your answer sheet. (2)



–Hết–

Semester 1 Year 11 Final Exam – Answer key

Question	Answer	Mark
Question 1		
a.	$160^o = 160 \times \frac{\pi}{180}$	1
	$= \frac{8\pi}{9}$	1
b.	$10.4 = 10.4 \times \frac{180}{\pi}$	1
	$= 595.88^o$	1
Question 2		
a.	We have: $20\pi = \frac{240}{360}\pi\, r^2$	1
	$\frac{20\pi}{\frac{2\pi}{3}} = r^2$ $30 = r^2$	1
	$r = \sqrt{30} = 5.48cm$	1
b.	$l = \frac{240}{360} \times\ 2\pi\ \times\ 5.48$	1
	$= \frac{548}{75}\pi = 22.95cm$	1
Question 3		
	The coordinate of the point P is: $P = (\cos 4.2\,, \sin 4.2)$	1
	$= (-0.490, -0.872)$	1
Question 4		
	The base angle is: $\theta = \tan^{-1} 1.7 = 59.53^o$	1
	Hence: $\theta_1 = 180^o - 59.53^o = 120.47^o$	1
	$\theta_2 = 360^o - 59.53^o = 300.47^o$	1
Question 5		
a.	We have: $\sin^2\theta + \cos^2\theta = 1$	1
	$\left(-\frac{3}{4}\right)^2 + \cos^2\theta = 1$ $\cos^2\theta = \frac{7}{16}$	1
	$\pi < \theta < \frac{3\pi}{2}$ hence $\cos\theta = -\frac{\sqrt{7}}{4}$	1
b.	$\tan\theta = \frac{\sin\theta}{\cos\theta} = \frac{-\frac{3}{4}}{-\frac{\sqrt{7}}{4}}$	1
	$= \frac{3}{\sqrt{7}}$	1
Question 6		
a.	$\sqrt{2}\cos x - 1 = 0$ $\cos x = \frac{1}{\sqrt{2}}$	1
	Hence $x = \frac{\pi}{4}$	1
	And $x = \frac{7\pi}{4}$	1

b.	$9\tan^2 x - 3 = 0$ $\tan^2 x = \frac{3}{9}$	1
	$tan\ x = \pm\frac{1}{\sqrt{3}}$	1
	$tan\ x = \frac{1}{\sqrt{3}}$ hence $x = \frac{\pi}{6}$ or $x = \frac{7\pi}{6}$	1
	$tan\ x = -\frac{1}{\sqrt{3}}$ hence $x = \frac{5\pi}{6}$ or $x = \frac{11\pi}{6}$	1
Question 7		
	$0 \le x \le 4\pi$ hence $0 \le \frac{x}{2} \le 2\pi$	1
	$2\sin\frac{x}{2} + \sqrt{3} = 0$ $sin\frac{x}{2} = -\frac{\sqrt{3}}{2}$	1
	Hence $\frac{x}{2} = \frac{4\pi}{3}$ and $\frac{x}{2} = \frac{5\pi}{3}$	1
	Hence $x = \frac{8\pi}{3}$ and $x = \frac{10\pi}{3}$	1
Question 8		
a.	Amplitude: 2	1
	Period: 2π	1
	Principal axis: $\frac{1}{2}$	1
	Maximum value: $\frac{5}{2}$	1
	Minimum value: $-\frac{3}{2}$	1
b.	Vertical dilation by a factor of 2	1
	Horizontal translation by $\frac{\pi}{4}$ units to the right	1
	Vertical translation by $\frac{1}{2}$ units upwards	1
c.		2