

# Penyelesaian Lengkap

## PRAKTIS 6

### Kertas 1

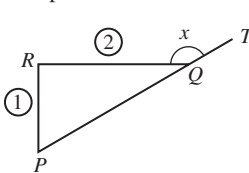
1 B

2  $\cos/\cos \theta = 0.3420$ ,  $\sin \theta = -0.9397$ ,

$$\begin{aligned} \tan \theta &= \frac{\sin \theta}{\cos/\cos \theta} \\ &= \frac{-0.9397}{0.3420} \\ &= -2.7477 \end{aligned}$$

Jawapan/Answer: A

3



$$\begin{aligned} PQ &= \sqrt{1^2 + 2^2} \\ &= \sqrt{5} \\ \cos/\cos x &= -\cos/\cos \angle PQR \\ &= -\frac{2}{\sqrt{5}} \end{aligned}$$

Jawapan/Answer: C

4  $180^\circ - 137^\circ = 43^\circ$

Jawapan/Answer: C

5  $2PT = QT$

$$\begin{aligned} PQ &= 3PT \\ PT &= 12 \div 3 = 4 \text{ cm} \\ QT &= 2 \times 4 = 8 \text{ cm} \\ TV &= \sqrt{6^2 + 8^2} \\ &= 10 \text{ cm} \end{aligned}$$

$$\begin{aligned} \cos/\cos y &= -\frac{8}{10} \\ &= -\frac{4}{5} \end{aligned}$$

Jawapan/Answer: D

6 5 units = 15 cm

$$\begin{aligned} 2 \text{ units} &= \frac{15}{5} \times 2 \text{ cm} \\ &= 6 \text{ cm} \\ TS^2 &= 15^2 + 6^2 \\ TS &= \sqrt{15^2 + 6^2} \\ &= 16.16 \end{aligned}$$

$$\begin{aligned} PT + TS &= 2 \times 16.16 \\ &= 32.32 \text{ cm} \end{aligned}$$

Jawapan/Answer: B

7 Amplitud/Amplitude,  $a = 3$

Tempoh/Period =  $180^\circ$

$$\frac{360^\circ}{b} = 180^\circ$$

$$b = 2$$

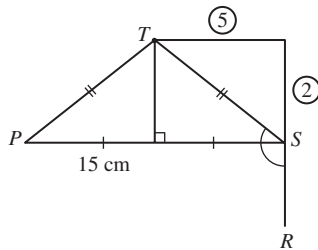
Anjakan menegak/Vertical shift,  $c = 0$

$$y = a \sin bx + c$$

$$y = 3 \sin 2x + 0$$

$$y = 3 \sin 2x$$

Jawapan/Answer: C



8

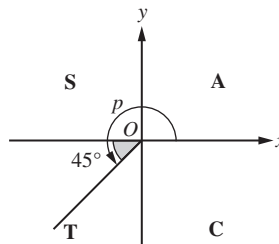
	$y = 2 \sin 3x - 1$	$y = 6 \cos 2x + 3$
<b>Maksimum Maximum</b>	$y = 2(1) - 1 = 1$	$y = 6(1) + 3 = 9$
<b>Minimum Minimum</b>	$y = 2(-1) - 1 = -3$	$y = 6(-1) + 3 = -3$
<b>Amplitud Amplitude</b>	2	6
<b>Tempoh Period</b>	$\frac{360^\circ}{3} = 120^\circ$	$\frac{360^\circ}{2} = 180^\circ$

Jawapan/Answer: B

9 Nilai sin dan kos adalah negatif, maka berada di sukuan yang sama, iaitu sukuan ke-3.

Diketahui  $\sin 45^\circ = \cos 45^\circ$ .

The value of  $\sin$  and  $\cos$  are negative, therefore both are in the same quadrant, i.e. quadrant 3. It is known that  $\sin 45^\circ = \cos 45^\circ$ .



$$\begin{aligned} p &= 180^\circ + 45^\circ \\ &= 225^\circ \end{aligned}$$

Jawapan/Answer: C

$$\begin{aligned} 10 \text{ Tempoh/Period} &= \frac{180^\circ}{2} \\ &= 90^\circ \end{aligned}$$

Jawapan/Answer: D

11 Fungsi/Function =  $\sin$

Amplitud/Amplitude,  $a = 3 - 1$

$$= 2$$

Tempoh/Period =  $360^\circ$ ,  $b = 1$

Anjakan menegak/Vertical shift,  $c = 1$

$$y = 2 \sin x + 1$$

Jawapan/Answer: B

12  $a = 19 - 12$

$$= 7$$

Tempoh/Period = 12 jam/hours  $c = 12$

$$\frac{360^\circ}{b} = 12$$

$$b = 30$$

$$T = 7 \sin 30t + 12$$

Jawapan/Answer: D

13 Nilai maksimum/Maximum value =  $3(1) - 2 = 1$

Nilai minimum/Minimum value =  $3(-1) - 2 = -5$

Jawapan/Answer: A

## Kertas 2

### Bahagian A

- 1 Diketahui koordinat  $(x, y) = (\cos \theta, \sin \theta)$   
 It is known that coordinate  $(x, y) = (\cos \theta, \sin \theta)$

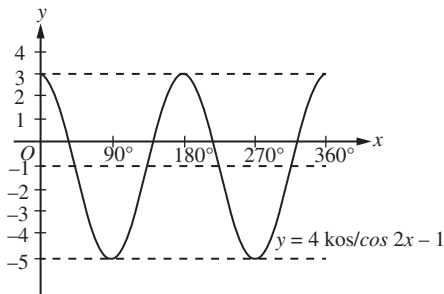
(a)  $\sin \theta = -0.643$   
 (b)  $\cos \theta / \sin \theta = -0.766$

(c)  $\tan \theta = \frac{-0.643}{-0.766}$   
 $= 0.8394$

- 2  $y = 4 \cos 2x - 1$  bagi  $0^\circ \leq x \leq 360^\circ$   
 $y = 4 \cos 2x - 1$  for  $0^\circ \leq x \leq 360^\circ$   
 Amplitud/Amplitude,  $a = 4$

Tempoh/Period  $= \frac{360^\circ}{2}$   
 $= 180^\circ$

Anjakan menegak/Vertical shift  $= -1$



- 3 (a) Amplitud/Amplitude,  $a = 3 - 1$   
 $= 2$

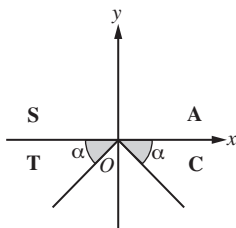
(b) Tempoh/Period  $= \frac{360^\circ}{3}$   
 $= 120^\circ$

- (c) Anjakan menegak/Vertical shift  $= 1$   
 $y = 2 \sin 3x + 1$

4 (a)  $\tan \theta = \frac{\sin \theta}{\cos \theta}$   
 $= \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}}$   
 $= \frac{\sqrt{3}}{2} \times \frac{2}{1}$   
 $= \sqrt{3}$

(b)  $\sin \theta = -0.6734$

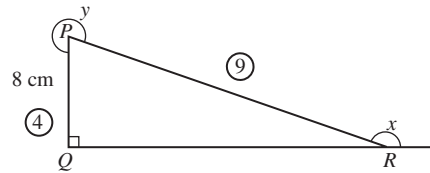
$\sin \theta$  bernilai negatif di sukuan III dan IV.  
 $\sin \theta$  is negative in quadrant III and IV.



Sudut rujukan sepadan/Corresponding reference angle,  $\alpha = \sin^{-1} 0.6734$   
 $= 42.33^\circ$

Sudut sebenar/Actual angle,  $\theta$   
 $= 180^\circ + 42.33^\circ$  atau/ or  $360^\circ - 42.33^\circ$   
 $= 222.33^\circ$  atau/ or  $317.67^\circ$

5



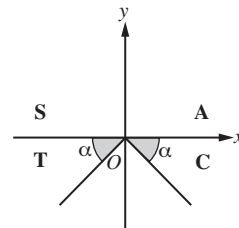
(a)  $\sin x = \frac{4}{9}$

$\frac{8}{PR} = \frac{4}{9}$   
 $PR = \frac{8 \times 9}{4}$   
 $= 18 \text{ cm}$   
 $QR = \sqrt{18^2 - 8^2}$   
 $= 16.12 \text{ cm}$

(b)  $\tan y = -\frac{16.12}{8}$   
 $= -2.015$

### Bahagian B

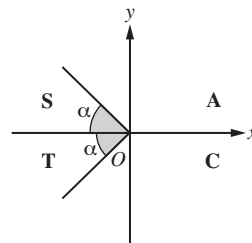
- 6 (a) (i)  $\sin y = -0.4714$



Sudut rujukan sepadan/Corresponding reference angle,  $\alpha = \sin^{-1} 0.4714$   
 $= 28.13^\circ$

Sudut sebenar/Actual angle,  
 $y = 180^\circ + 28.13^\circ$  atau/ or  $360^\circ - 28.13^\circ$   
 $= 208.13^\circ$  atau/ or  $331.87^\circ$

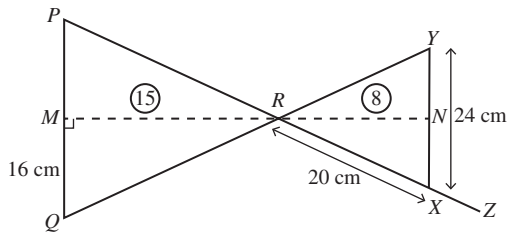
- (ii)  $\cos / \sin y = -0.2885$



Sudut rujukan sepadan/Corresponding reference angle,  $\alpha = \cos^{-1} 0.2885$   
 $= 73.23^\circ$

Sudut sebenar/Actual angle,  
 $y = 180^\circ - 73.23^\circ$  atau/ or  $180^\circ + 73.23^\circ$   
 $= 106.77^\circ$  atau/ or  $253.23^\circ$

(b)  $XN = 24 \div 2$   
 $= 12 \text{ cm}$   
 $RN = \sqrt{20^2 - 12^2}$   
 $= 16 \text{ cm}$



$$\frac{MR}{MN} = \frac{15}{23} \rightarrow \frac{MR}{RN} = \frac{15}{8}$$

$$MR = \left(\frac{15}{8} \times 16\right) \text{ cm}$$

$$= 30 \text{ cm}$$

$$QR = \sqrt{16^2 + 30^2}$$

$$= 34 \text{ cm}$$

$$\tan \angle ZXY = -\tan \angle RXY \quad \text{kos/cos } \angle RQM = \frac{16}{34}$$

$$= -\frac{16}{12} = \frac{8}{17}$$

$$= -\frac{4}{3} = \frac{8}{17}$$

$$\text{kos/cos } \angle RQM + \tan \angle ZXY = \frac{8}{17} - \frac{4}{3}$$

$$= -0.8627$$

7  $y = 15 \sin 40t + 20$

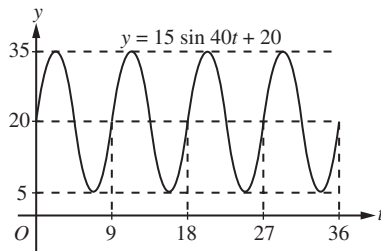
(a) Amplitud/Amplitude = 15 m

(b) Tempoh/Period =  $\frac{360}{40}$   
= 9 s

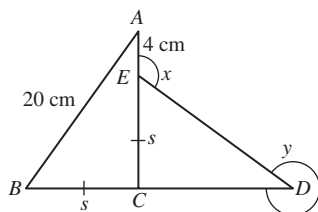
(c) Anjakan menegak graf / Vertical shift of the graph = 20 m

(d) Nilai maksimum/Maximum value =  $15(1) + 20$   
= 35 m

(e) Nilai minimum/Minimum value =  $15(-1) + 20$   
= 5 m



8



(a)  $s^2 + (s + 4)^2 = 20^2$   
 $s^2 + s^2 + 8s + 16 = 400$   
 $2s^2 + 8s + 16 - 400 = 0$   
 $s^2 + 4s - 192 = 0$   
 $(s + 16)(s - 12) = 0$

$$s = -16 \text{ (ditolak/rejected), } s = 12 \text{ cm}$$

$$AC = 4 + 12$$

$$= 16 \text{ cm}$$

(b)  $\tan x = -\frac{16}{12}$   
 $= -\frac{4}{3}$

(c)  $\sin y = -\frac{12}{20}$   
 $= -\frac{3}{5}$

Sudut rujukan sepadan/Corresponding reference

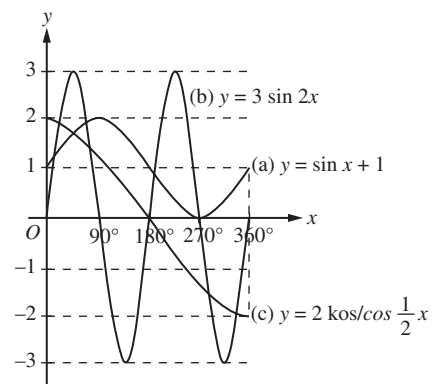
$$\text{angle, } \alpha = \sin^{-1} \frac{3}{5}$$

$$= 36.87^\circ$$

$$y = 360^\circ - 36.87^\circ$$

$$= 323.13^\circ$$

9 (a), (b), (c)



### Bahagian C

10 (a)  $a = 9 - 2$  Tempoh/Period = 12 jam/hours  $c = 2$   
 $= 7$

$$\frac{360}{b} = 12$$

$$b = 30$$

(b) Julat suhu dalam sehari/Range of temperature in one day =  $9 - (-5)$   
 $= 14^\circ\text{C}$

$$t = 15$$

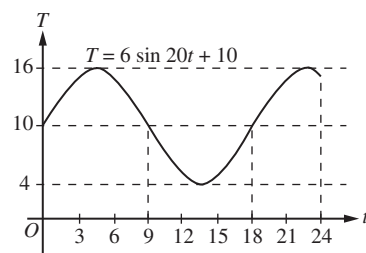
$$T = 7 \sin (30 \times 15) + 2$$

$$= 9^\circ\text{C}$$

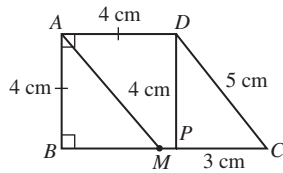
(c)  $T = 6 \sin 20t + 10$

$$a = 6 \quad \text{Tempoh/Period} = \frac{360^\circ}{20} \quad c = 10$$

$$= 18 \text{ jam/hours}$$

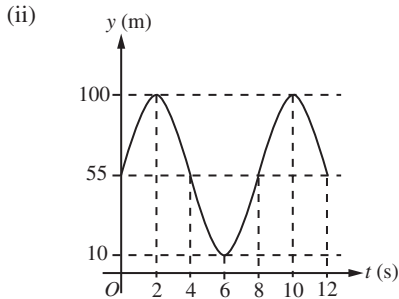


11 (a) (i)  $PC = \sqrt{5^2 - 4^2}$   
 $= 3 \text{ cm}$   
 $BM = \frac{4 + 3}{2}$   
 $= 3.5 \text{ cm}$   
 $AM = \sqrt{4^2 + 3.5^2}$   
 $= \sqrt{28.25}$   
 $= 5.315 \text{ cm}$



(ii)  $\angle AMC$  dalam sukuan II.  
 $\angle AMC$  in quadrant II.  
 $\cos/\cos \angle AMC + \sin \angle AMC$   
 $= -\frac{3.5}{5.315} + \frac{4}{5.315}$   
 $= \frac{100}{1063}$  atau/or 0.0941

(b) (i) Fungsi sinus/Sine function



Amplitud/Amplitude,  $a = 100 - 55$   
 $= 45$   
 $\frac{360^\circ}{b} = 8$   
 $b = \frac{360^\circ}{8}$   
 $= 45$   
 $c = 55$

$\therefore y = 45 \sin 45t + 55$

(iii) Nilai maksimum/Maximum value = 80 cm

Nilai minimum/Minimum value = 30 cm

$a = \frac{80 - 30}{2}$        $c = \frac{80 + 30}{2}$   
 $= 25$                        $= 55$

Maklumat tentang tempoh tidak diberi. Maka, diandaikan bahawa tempoh tidak berubah. *The information about period is not given, therefore, assume that period remains unchanged.*

Fungsi trigonometri/Trigonometric function,

$y = 25 \sin 45t + 55$

$t = 25, y = 25 \sin 45(25) + 55$   
 $= 72.68 \text{ cm}$