

**Excel Matematik SPM**  
**Tingkatan 5 Bab 6**  
**Nisbah dan Graf Trigonometri**  
**Penyelesaian Lengkap**

**Praktis Formatif 6.1**

**1**

Sudut	Sukuan	sinus	kosinus	tangen
$\alpha$	II	Koordinat-y = 0.6	Koordinat-x = -0.8	$\frac{\text{Koordinat-y}}{\text{Koordinat-x}} = -0.75$
$\beta$	III	Koordinat-y = -0.8	Koordinat-x = -0.6	$\frac{\text{Koordinat-y}}{\text{Koordinat-x}} = 1.33$
$\delta$	IV	Koordinat-y = -0.92	Koordinat-x = 0.4	$\frac{\text{Koordinat-y}}{\text{Koordinat-x}} = -2.3$

- 2** (a) Positif,  $\sin 56^\circ$   
 (b) Negatif,  $-\sin 15^\circ$   
 (c) Negatif,  $-\sin 71^\circ$   
 (d) Negatif,  $-\cos 75^\circ$   
 (e) Negatif,  $-\cos 9^\circ$   
 (f) Positif,  $\cos 56^\circ$   
 (g) Negatif,  $-\tan 6^\circ$   
 (h) Positif,  $\tan 75^\circ$   
 (i) Negatif,  $-\tan 19^\circ$

**3** (a)  $\cos 150^\circ = -\cos (180^\circ - 150^\circ)$

$$= -\cos 30^\circ$$

$$= -\frac{\sqrt{3}}{2}$$

(b)  $\sin 225^\circ = -\sin (225^\circ - 180^\circ)$

$$= -\sin 45^\circ$$

$$= -\frac{1}{\sqrt{2}}$$

(c)  $\sin 240^\circ = -\sin (240^\circ - 180^\circ)$

$$= -\sin 60^\circ$$

$$= -\frac{\sqrt{3}}{2}$$

(d)  $\cos 315^\circ = \cos (360^\circ - 315^\circ)$

$$= \cos 45^\circ$$

$$= \frac{1}{\sqrt{2}}$$

(e)  $\cos 210^\circ = -\cos (210^\circ - 180^\circ)$

$$= -\cos 30^\circ$$

$$= -\frac{\sqrt{3}}{2}$$

(f)  $\tan 150^\circ = -\tan (180^\circ - 150^\circ)$

$$= -\tan 30^\circ$$

$$= -\frac{1}{\sqrt{3}}$$

(g)  $\tan 240^\circ = \tan (240^\circ - 180^\circ)$

$$= \tan 60^\circ$$

$$= \sqrt{3}$$

(h)  $\tan 330^\circ = -\tan (360^\circ - 330^\circ)$

$$= -\tan 30^\circ$$

$$= -\frac{1}{\sqrt{3}}$$

**4** (a)  $\sin \alpha = 0.6124$

$\angle$  asas =  $37.76^\circ$

$\alpha = 37.76^\circ$  atau  $142.24^\circ$

(b)  $\cos \alpha = 0.2388$

$\angle$  asas =  $76.18^\circ$

$\alpha = 76.18^\circ$  atau  $283.82^\circ$

(c)  $\tan \alpha = 2.7892$

$\angle$  asas =  $70.28^\circ$

$\alpha = 70.28^\circ$  atau  $250.28^\circ$

(d)  $\sin \alpha = -0.8552$

$\angle$  asas =  $58.78^\circ$

$\alpha = 238.78^\circ$  atau  $301.22^\circ$

(e)  $\cos \alpha = -0.7268$

$\angle$  asas =  $43.38^\circ$

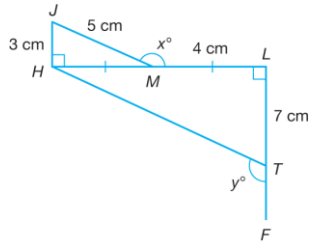
$$\alpha = 136.62^\circ \text{ atau } 223.38^\circ$$

(f)  $\tan \alpha = -2.3578$

$$\angle \text{ asas} = 67.02^\circ$$

$$\alpha = 112.98^\circ \text{ atau } 292.98^\circ$$

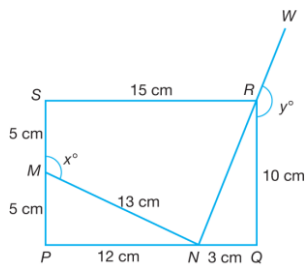
5



(a)  $\cos x^\circ = -\cos \angle JMH = -\frac{4}{5}$

(b)  $\tan y^\circ = -\tan \angle HTL = -\frac{8}{7}$

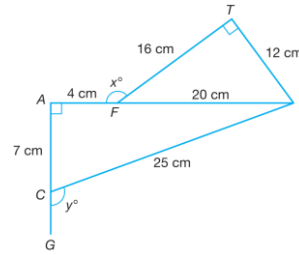
6 (a)



(a)  $\cos x^\circ = \cos \angle PMN = -\frac{5}{13}$

((b)  $\tan y^\circ = -\tan \angle NRQ = -\frac{3}{10}$

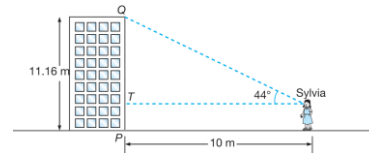
7



(a)  $\sin x^\circ = \sin \angle TFP = \frac{12}{20} = \frac{3}{5}$

(b)  $\cos y^\circ = -\cos \angle ACP = -\frac{7}{25}$

8  $8^\circ 33'$



$$\tan 44^\circ = \frac{QT}{10}$$

$$QT = 10 \times \tan 44^\circ$$

$$QT = 9.66 \text{ m}$$

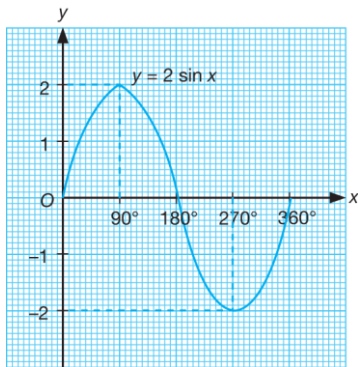
$$PT = 11.16 - 9.66 = 1.5 \text{ m}$$

$$\tan \angle TSP = \frac{1.5}{10}$$

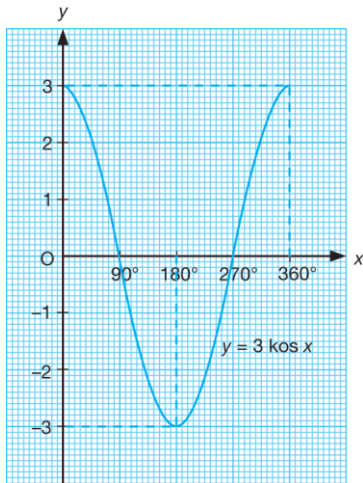
$$\text{Sudut tondok} = 8^\circ 33'$$

**Praktis Formatif 6.2**

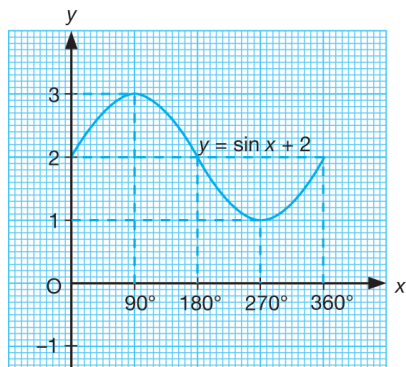
1 (a)



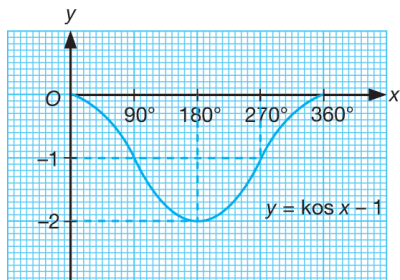
(b)



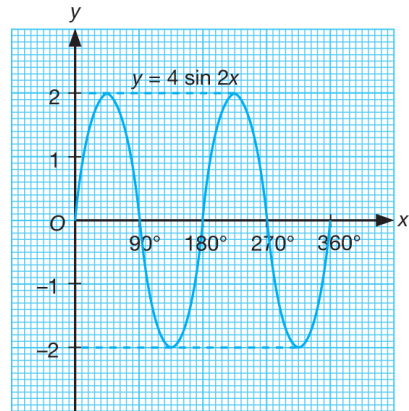
(c)



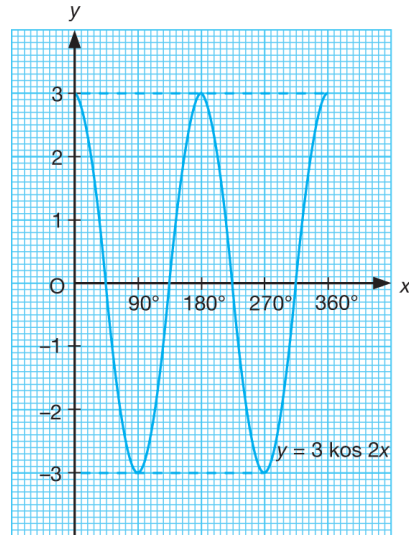
(d)



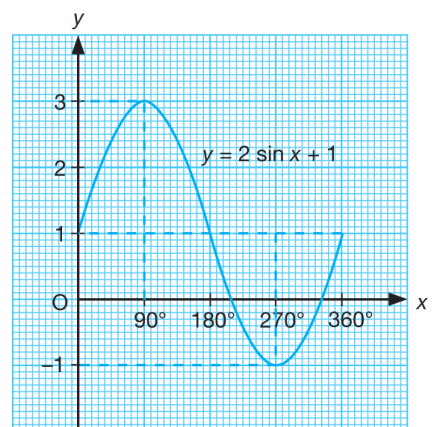
2 (a)



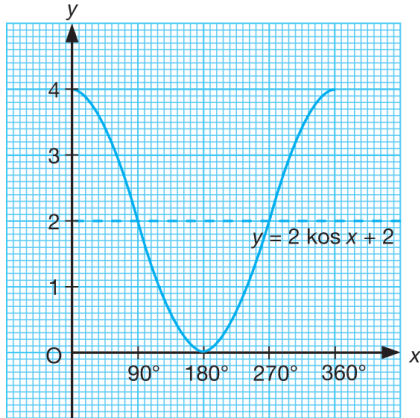
(b)



(c)



(d)



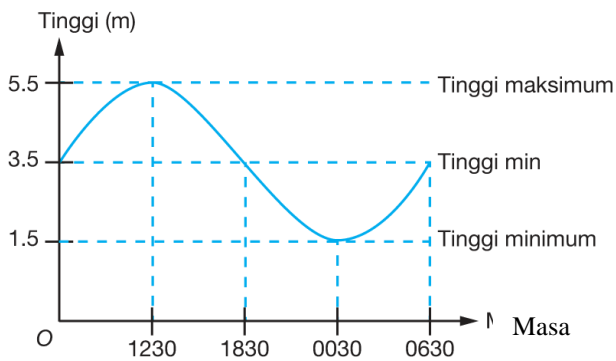
3  $V = A \sin 93\,600t$

$$93\,600t = 360$$

$$t = \frac{1}{260}$$

$$\text{Kala} = \frac{1}{260} \text{ saat}$$

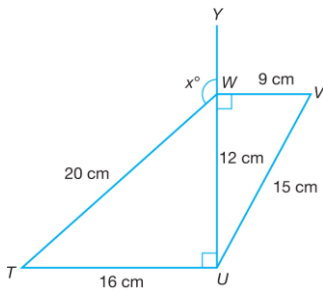
4



**Praktis Sumatif 6.1**

**Soalan Objektif**

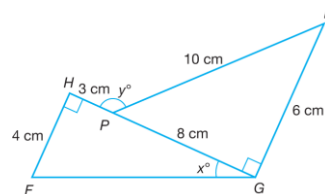
1



$$\cos x^\circ = -\cos \angle TWU = -\frac{12}{20} = -\frac{3}{5}$$

Jawapan: B

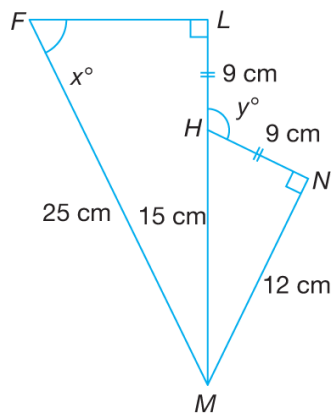
2



$$\cos y^\circ = -\cos \angle LPQ = -\frac{8}{10} = -\frac{3}{5}$$

Jawapan: A

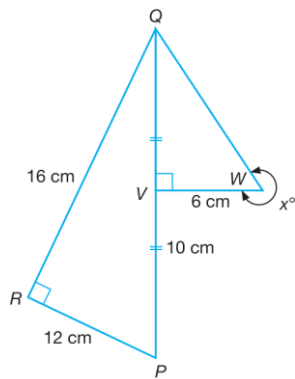
3



$$\cos y^\circ = -\frac{9}{15} = -\frac{3}{5}$$

Jawapan: A

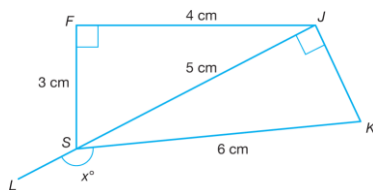
4



$$\tan x^\circ = -\tan \angle VWQ = -\frac{10}{6} = -\frac{5}{3}$$

Jawapan: D

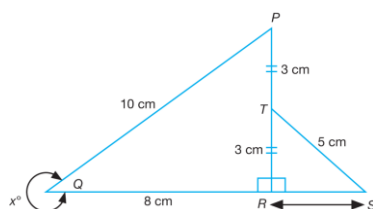
5



$$\cos x^\circ = -\frac{5}{6}$$

Jawapan: A

6

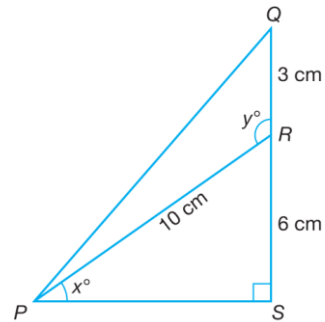


$$\tan x^\circ = -\tan \angle PQR = -\frac{6}{8} = -\frac{3}{4}$$

Jawapan: C

### Soalan Struktur

1



(a)  $\sin x^\circ = \frac{6}{10}$

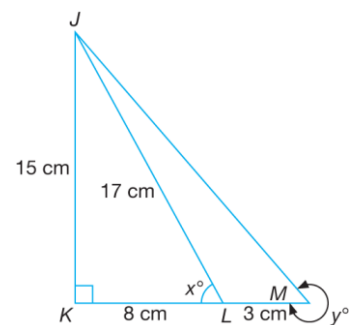
$$\angle \text{asas} = 26^\circ 53'$$

$$x^\circ = 36^\circ 52'$$

(b)  $\cos y^\circ = -\frac{6}{10}$

$$y = 180^\circ - 53^\circ 8' = 126^\circ 52'$$

2



(a)  $\sin x^\circ = \frac{15}{17}$

$$x = 61^\circ 56'$$

(b)  $\tan y^\circ = -\tan \angle JMK$

$$= -\frac{15}{11}$$

$$\angle \text{asas} = 53^\circ 45'$$

$$y = 306^\circ 15'$$

3 (a)  $\sin x = 0.8290$

$$\angle \text{asas} = 56^\circ$$

$$x = 56^\circ, 124^\circ$$

(b)  $\cos x = -0.8290$

$$\angle \text{asas} = 34^\circ$$

$$x = 146^\circ, 214^\circ$$

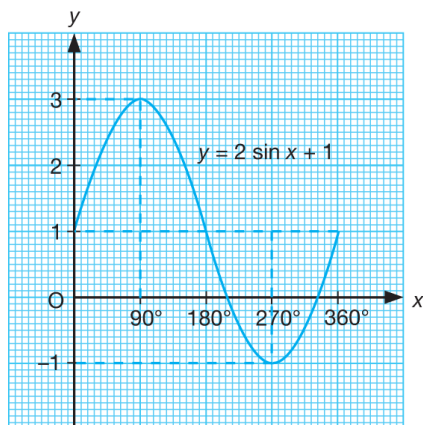
4 (a)  $\cos y = 0.2588$   
 $\angle$  asas =  $75^\circ$   
 $y = 75^\circ, 285^\circ$

(b)  $\tan y = -0.6249$   
 $\angle$  asas =  $32^\circ$   
 $y = 148^\circ, 328^\circ$

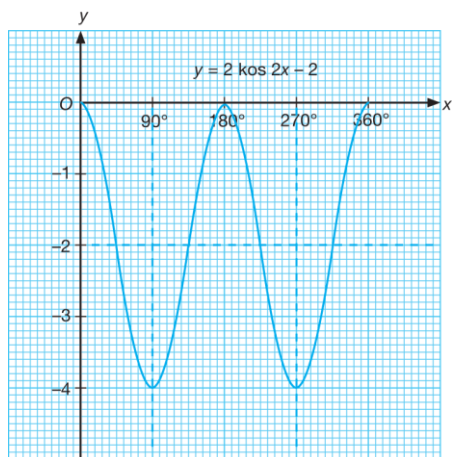
5 (a)  $\cos z = 0.9659$   
 $\angle$  asas =  $15^\circ$   
 $z = 15^\circ, 345^\circ$

(b)  $\sin z = -0.2588$   
 $\angle$  asas =  $15^\circ$   
 $z = 195^\circ, 345^\circ$

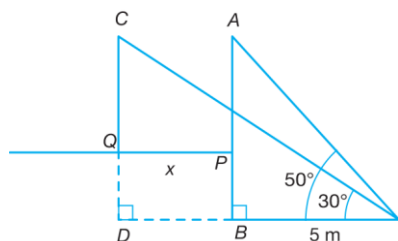
6



7



8



Dalam  $\triangle AOB$ ,  
 $\tan 50^\circ = \frac{AB}{5}$

$$AB = 5 \tan 50^\circ$$

Dalam  $\triangle COD$ ,

$$\tan 30^\circ = \frac{CD}{x+5}$$

$$\tan 30^\circ = \frac{5 \tan 50^\circ}{x+5}$$

$CD = AB$

$$0.5774(x+5) = 5.9588$$

$$x+5 = 10.32$$

$$x = 5.32$$

$$PQ = 5.32 \text{ cm}$$

9 (a)  $y = 6 + 2 \sin 30t$

Apabila  $30t = 360$ ,

$$t = 12$$

Kala = 12 jam

(b)  $y = 6 + 2(1) = 8$

$$\sin 30t = 1$$

$$30t = 90$$

$$t = 3$$

Aras air laut adalah tertinggi pada pukul 3 pagi dengan kedalaman 8 m.

(c)  $y = 6 + 2(-1) = 4$

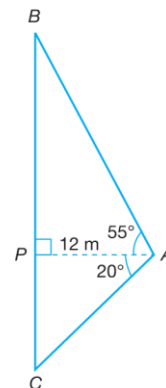
$$\sin 30t = -1$$

$$30t = 270$$

$$t = 9$$

Aras air laut adalah terendah pada pukul 9 pagi dengan kedalaman 4 m.

10



Dalam  $\triangle APB$ ,

$$\tan 55^\circ = \frac{PB}{12}$$

$$PB = 17.138 \text{ m}$$

Dalam  $\triangle APC$ ,

$$\tan 20^\circ = \frac{PC}{12}$$

$$PC = 12 \times \tan 20^\circ$$

$$PC = 4.368 \text{ m}$$

$$BC = 17.138 + 4.368 = 21.51 \text{ m}$$