

Penyelesaian Lengkap

Praktis 6

Praktis Formatif

6.1 Nilai Sinus, Kosinus dan Tangen bagi Sudut θ ,

$$0^\circ \leq \theta \leq 360^\circ$$

The Value of Sine, Cosine and Tangent for Angle θ ,

$$0^\circ \leq \theta \leq 360^\circ$$

1 Rajah 1/Diagram 1

- Sukuan/Quadrant II
- $90^\circ < \theta < 180^\circ$
- $\theta = 180^\circ - 15^\circ$
 $= 165^\circ$
- $\sin \theta = + \sin \alpha$

Rajah 2/Diagram 2

- Sukuan/Quadrant III
- $180^\circ < \theta < 270^\circ$
- $\theta = 180^\circ + 15^\circ$
 $= 195^\circ$
- $\tan \theta = + \tan \alpha$

Rajah 3/Diagram 3

- Sukuan/Quadrant IV
- $270^\circ < \theta < 360^\circ$
- $\theta = 360^\circ - 15^\circ$
 $= 345^\circ$
- $\cos/\cos \theta = +\cos/\cos \alpha$

- $360^\circ - 355^\circ = 5^\circ$
 - $180^\circ - 127^\circ = 53^\circ$
 - $222.2^\circ - 180^\circ = 42.2^\circ$
 - $360^\circ - 289^\circ = 71^\circ$
 - $267.8^\circ - 180^\circ = 87.8^\circ$
 - $360^\circ - 300^\circ 15' = 59^\circ 45'$
 - $180^\circ - 123.4^\circ = 56.6^\circ$
 - $360^\circ - 326^\circ 55' = 33^\circ 5'$

- $\sin 213^\circ$
 $= -\sin (213^\circ - 180^\circ)$
 $= -\sin 33^\circ$
 - $\tan 330^\circ$
 $= -\tan (360^\circ - 330^\circ)$
 $= -\tan 30^\circ$
 - $\cos/\cos 278^\circ$
 $= \cos/\cos (360^\circ - 278^\circ)$
 $= \cos/\cos 82^\circ$
 - $\sin 103^\circ$
 $= \sin (180^\circ - 103^\circ)$
 $= \sin 77^\circ$
 - $\cos/\cos 126^\circ$
 $= -\cos/\cos (180^\circ - 126^\circ)$
 $= -\cos/\cos 54^\circ$
 - $\tan 259^\circ$
 $= \tan (259^\circ - 180^\circ)$
 $= \tan 79^\circ$
 - $\sin 300.7^\circ$
 $= -\sin (360^\circ - 300.7^\circ)$
 $= -\sin 59.3^\circ$
 - $\cos/\cos 205^\circ 22'$
 $= -\cos/\cos (205^\circ 22' - 180^\circ)$
 $= -\cos/\cos 25^\circ 22'$
 - $\tan 125^\circ 45'$
 $= -\tan (180^\circ - 125^\circ 45')$
 $= -\tan 54^\circ 15'$
 - $\sin 95^\circ 32'$
 $= \sin (180^\circ - 95^\circ 32')$
 $= \sin 84^\circ 28'$
 - $\cos/\cos 94.8^\circ$
 $= -\cos/\cos (180^\circ - 94.8^\circ)$
 $= -\cos/\cos 85.2^\circ$
 - $\tan 289.6^\circ$
 $= -\tan (360^\circ - 289.6^\circ)$
 $= -\tan 70.4^\circ$

4	Sudut Angle	Sukuan Quadrant	Nilai sinus Value of sine	Nilai kosinus Value of cosine	Nilai tangen Value of tangent
	θ	I	koordinat-y = 0.6	koordinat-x = 0.8	$\frac{\text{koordinat-y}}{\text{koordinat-x}} = \frac{0.6}{0.8} = 0.75$
	α	II	koordinat-y = 0.8	koordinat-x = -0.6	$\frac{\text{koordinat-y}}{\text{koordinat-x}} = \frac{0.8}{-0.6} = -1.333$
	β	III	koordinat-y = -0.6	koordinat-x = -0.8	$\frac{\text{koordinat-y}}{\text{koordinat-x}} = \frac{-0.6}{-0.8} = 0.75$
	σ	IV	koordinat-y = -0.92	koordinat-x = 0.4	$\frac{\text{koordinat-y}}{\text{koordinat-x}} = \frac{-0.92}{0.4} = -2.3$

5 (a)

$\sin 120^\circ$	$\sin 352^\circ$	$\sin 220^\circ$	$\sin 153^\circ$
$\sin 178^\circ$	$\sin 311.9^\circ$	$\sin 200^\circ$	$\sin 95^\circ$

Sudut yang dibulatkan berada dalam sukuan II.
The circled angles are in quadrant II.

(b)

$\cos/\cos 260^\circ 17'$	$\cos/\cos 102^\circ$
$\cos/\cos 272^\circ$	$\cos/\cos 299^\circ$
$\cos/\cos 356^\circ 48'$	$\cos/\cos 301^\circ$
$\cos/\cos 231^\circ$	$\cos/\cos 95^\circ$

Sudut yang dibulatkan berada dalam sukuan IV.
The circled angles are in quadrant IV.

(c)

$\tan 280^\circ 66'$	$\tan 202^\circ$	$\tan 190^\circ$
$\tan 103^\circ$	$\tan 284^\circ$	$\tan 341^\circ$
$\tan 234.5^\circ$	$\tan 195^\circ$	

Sudut yang dibulatkan berada dalam sukuan III.
The circled angles are in quadrant III.

6 (a) $\sin 326^\circ$
 $= -\sin (360^\circ - 326^\circ)$
 $= -\sin 34^\circ$
 $= -0.5592$

(b) $\cos/\cos 112.4^\circ$
 $= -\cos/\cos (180^\circ - 112.4^\circ)$
 $= -\cos/\cos 67.6^\circ$
 $= -0.3811$

(c) $\tan 256^\circ$
 $= \tan (256^\circ - 180^\circ)$
 $= \tan 76^\circ$
 $= 4.011$

(d) $\sin 153^\circ$
 $= \sin (180^\circ - 153^\circ)$
 $= \sin 27^\circ$
 $= 0.4540$

(e) $\cos/\cos 323^\circ$
 $= \cos/\cos (360^\circ - 323^\circ)$
 $= \cos/\cos 37^\circ$
 $= 0.7986$

(f) $\tan 289^\circ 23'$
 $= -\tan 360^\circ - 289^\circ 23'$
 $= -\tan 70^\circ 37'$
 $= -2.842$

(g) $\sin 202^\circ$
 $= -\sin (202^\circ - 180^\circ)$
 $= -\sin 22^\circ$
 $= -0.3746$

(h) $\cos/\cos 265^\circ$
 $= -\cos/\cos (265^\circ - 180^\circ)$
 $= -\cos/\cos 85^\circ$
 $= -0.08716$

(i) $\tan 108^\circ$
 $= -\tan (180^\circ - 108^\circ)$
 $= -\tan 72^\circ$
 $= -3.078$

7 (a) $\sin 315^\circ$
 $= -\sin (360^\circ - 315^\circ)$
 $= -\sin 45^\circ$
 $= -\frac{1}{\sqrt{2}}$

(b) $\cos/\cos 330^\circ$
 $= \cos/\cos (360^\circ - 330^\circ)$
 $= \cos 30^\circ$
 $= \frac{\sqrt{3}}{2}$

(c) $\tan 240^\circ$
 $= \tan (240^\circ - 180^\circ)$
 $= \tan 60^\circ$
 $= \sqrt{3}$

(d) $\sin 225^\circ$
 $= -\sin (225^\circ - 180^\circ)$
 $= -\sin 45^\circ$
 $= -\frac{1}{\sqrt{2}}$

(e) $\cos/\cos 120^\circ$
 $= -\cos/\cos (180^\circ - 120^\circ)$
 $= -\cos/\cos 60^\circ$
 $= -\frac{1}{2}$

(f) $\tan 300^\circ$
 $= -\tan (360^\circ - 300^\circ)$
 $= -\tan 60^\circ$
 $= -\sqrt{3}$

(g) $\sin 150^\circ$
 $= \sin (180^\circ - 150^\circ)$
 $= \sin 30^\circ$
 $= \frac{1}{2}$

(h) $\cos/\cos 210^\circ$
 $= -\cos/\cos (210^\circ - 180^\circ)$
 $= -\cos/\cos 30^\circ$
 $= -\frac{\sqrt{3}}{2}$

(i) $\tan 135^\circ$
 $= -\tan (180^\circ - 135^\circ)$
 $= -\tan 45^\circ$
 $= -1$

8 (a) $\tan \theta = 1.732$
Tanda $\tan \theta$ adalah positif, θ terletak pada sukuan I dan III.
Sign of $\tan \theta$ is positive, θ lies on quadrants I and III.
 $\tan^{-1} 1.732 = 60^\circ$
Maka/Thus, $\theta = 60^\circ$ atau/or $(180^\circ + 60^\circ)$
 $= 60^\circ$ atau/or 240°

(b) $\cos/\cos \theta = -0.848$
Tanda $\cos \theta$ adalah negatif, θ terletak pada sukuan II dan III.
Sign of $\cos \theta$ is negative, θ lies on quadrants II and III.
 $\cos/\cos^{-1} 0.848 = 32^\circ$
Maka/Thus, $\theta = (180^\circ - 32^\circ)$ atau/or $(180^\circ + 32^\circ)$
 $= 148^\circ$ atau/or 212°

- (c) $\sin \theta = 0.9848$
 Tanda $\sin \theta$ adalah positif, θ terletak pada sukuan I dan II.
Sign of $\sin \theta$ is positive, θ lies on quadrants I and II.
 $\sin^{-1} 0.9848 = 80^\circ$
 Maka/Thus, $\theta = 80^\circ$ atau/or $(180^\circ - 80^\circ)$
 $= 80^\circ$ atau/or 100°

- (d) $\cos/\cos \theta = 0.1736$
 Tanda $\cos \theta$ adalah positif, θ terletak pada sukuan I dan IV.
Sign of $\cos \theta$ is positive, θ lies on quadrants I and IV.
 $\cos/\cos^{-1} 0.1736 = 80^\circ$
 Maka/Thus $\theta = 80^\circ$ atau/or $(360^\circ - 80^\circ)$
 $= 80^\circ$ atau/or 280°

- (e) $\sin \theta = -0.766$
 Tanda $\sin \theta$ adalah negatif, θ terletak pada sukuan III dan IV.
Sign of $\sin \theta$ is negative, θ lies on quadrants III and IV.
 $\sin^{-1} 0.766 = 50^\circ$
 Maka/Thus, $\theta = (180^\circ + 50^\circ)$ atau/or $(360^\circ - 50^\circ)$
 $= 230^\circ$ atau/or 310°

- (f) $\tan \theta = -0.6745$
 Tanda $\tan \theta$ adalah negatif, θ terletak pada sukuan II dan IV.
Sign of $\tan \theta$ is negative, θ lies on quadrants II and IV.
 $\tan^{-1} 0.6745 = 34^\circ$
 Maka/Thus, $\theta = (180^\circ - 34^\circ)$ atau/or $(360^\circ - 34^\circ)$
 $= 146^\circ$ atau/or 326°

- 9 (a) Panjang jejari/Length of radius

$$= \sqrt{\left(\frac{1}{\sqrt{2}}\right)^2 + \left(\frac{1}{\sqrt{2}}\right)^2}$$

$$= 1 \text{ unit}$$

- (b) (1, 0)

- (c) (i) $\cos/\cos \theta$
 $= -\cos/\cos(180^\circ - \theta^\circ)$

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

- (ii) $\tan \theta$
 $= -\tan(180^\circ - \theta^\circ)$

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

$$= -1$$

- (iii) $\sin \theta$
 $= \sin(180^\circ - \theta^\circ)$

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

- (iv) $\sin(180^\circ - \theta^\circ) = \frac{1}{\sqrt{2}}$

$$\begin{aligned} 180^\circ - \theta^\circ &= 45^\circ \\ \theta &= 180^\circ - 45^\circ \\ &= 135^\circ \end{aligned}$$

10 $\sin 15^\circ = \frac{t}{36.5}$

$$t = 9.447 \text{ m}$$

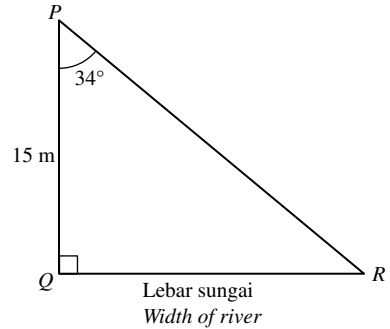
11 $\sin 20^\circ = \frac{5}{PR}$

$$PR = 14.62 \text{ m}$$

$$\text{Masa/Time} = \frac{14.62}{5}$$

$$= 2.924 \text{ s}$$

12



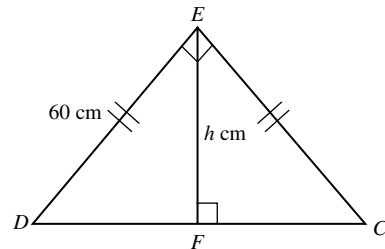
$$\tan 34^\circ = \frac{l}{15}$$

$$l = 10.12 \text{ m}$$

Lebar sungai/Width of the river = 10.12 m

- 13 (a) $DC = \sqrt{60^2 + 60^2}$
 $DC = 84.85 \text{ cm}$

(b)



$$h = 60 \cos/\cos 45^\circ$$

$$h = 42.43 \text{ cm}$$

$$t = 1.2 + 0.4243$$

$$t = 1.624 \text{ m}$$

- (c) $h = 55 \cos/\cos 45^\circ$

$$h = 38.89 \text{ cm}$$

$$t = 1.2 + 0.3889$$

$$t = 1.589 \text{ m}$$

Ketinggian pondok pada permulaan/Height of cottage at first = 1.624 m

Tinggi pondok akan dikurangkan sebanyak

The height of the cottage will be lesser

$$1.624 \text{ m} - 1.589 \text{ m}$$

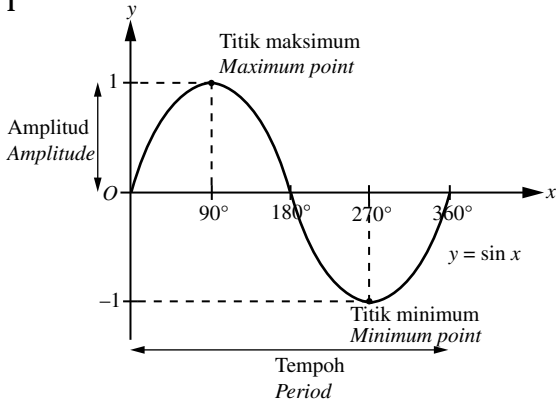
$$= 0.035 \text{ m.}$$

- (d) $DE \cos/\cos 45^\circ = 20$

$$DE = 28.28 \text{ cm}$$

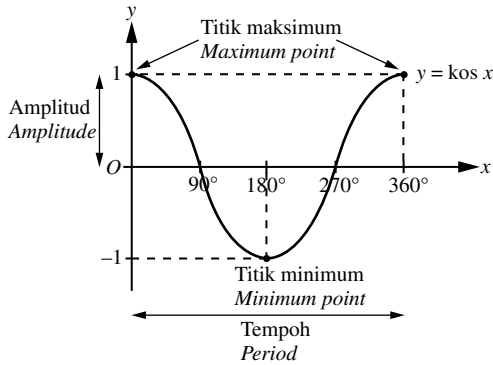
6.2 Graf Fungsi Sinus, Kosinus dan Tangen
The Graphs of Sine, Cosine and Tangent Functions

1



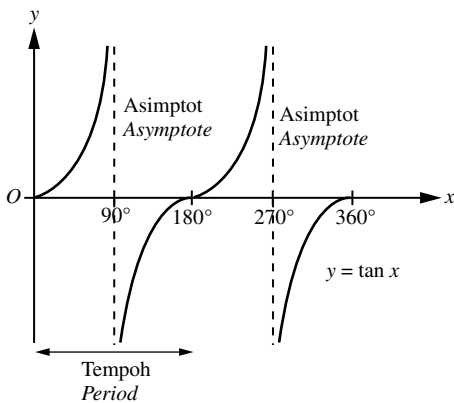
- (a) 1
- (b) 360°
- (c) (90°, 1)
- (d) (270°, -1)
- (e) $x = 0^\circ, 180^\circ, 360^\circ$

2



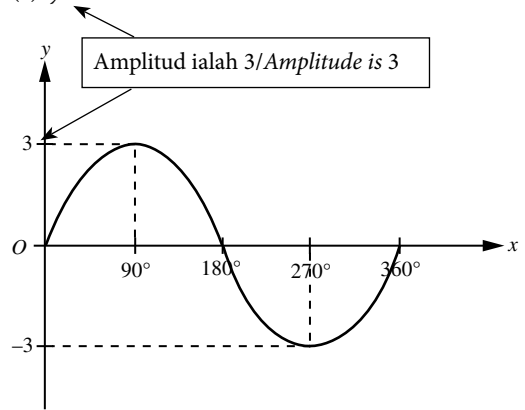
- (a) 1
- (b) 360°
- (c) (0°, 1), (360°, 1)
- (d) (180°, -1)
- (e) $x = 90^\circ, 270^\circ$

3

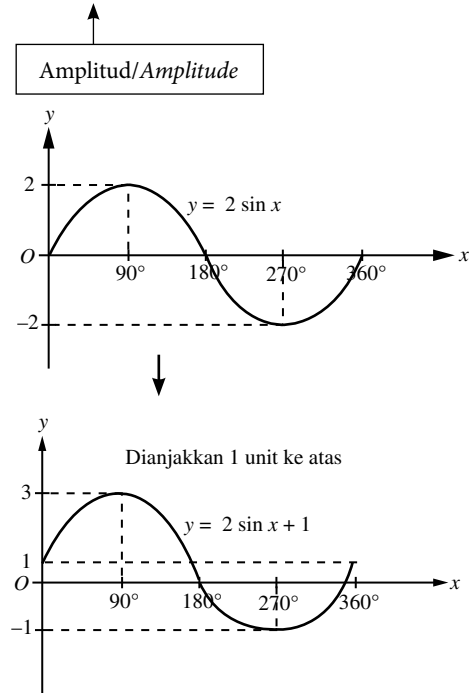


- (a) 180°
- (b) $x = 0^\circ, 180^\circ, 360^\circ$
- (c) $x = 90^\circ, x = 270^\circ$

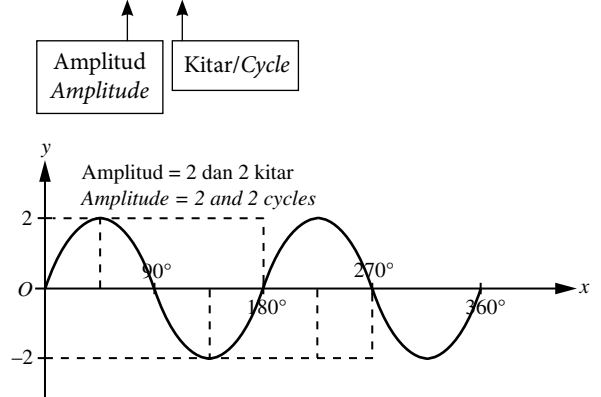
4 (a) $y = 3 \sin x$



(b) $y = 2 \sin x + 1$

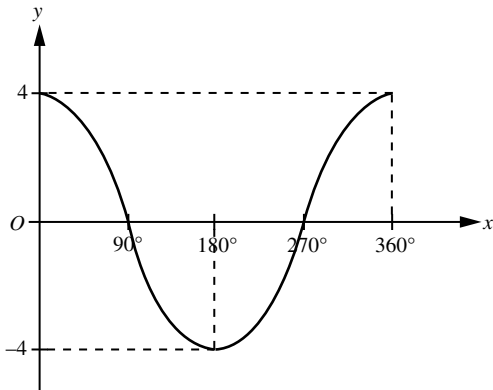


(c) $y = 2 \sin 2x$



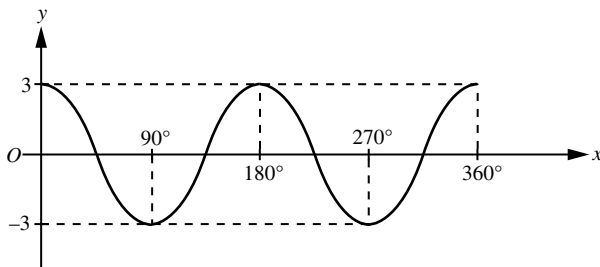
5 (a) $y = 4 \cos x$

Amplitud/*Amplitude*



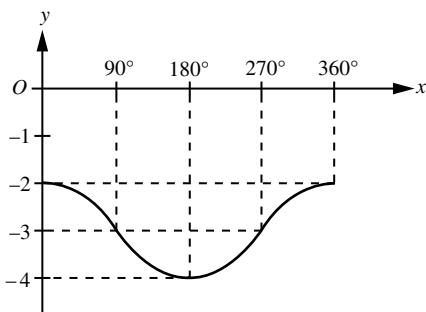
(b) $y = 3 \cos 2x$

Amplitud
Amplitude Kitar/*Cycle*



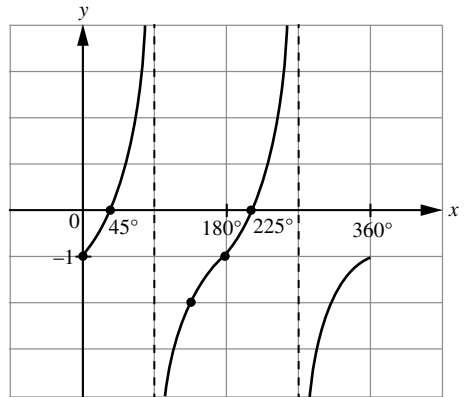
(c) $y = \cos x - 3$

Dianjakkan 3 unit ke bawah/*Move 3 units down*



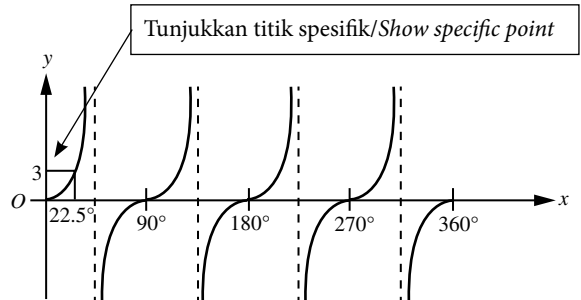
6 (a) $y = \tan x - 1$

Dianjakkan 1 unit ke bawah/*Move 1 unit down*



(b) $y = 3 \tan 2x$

1 kitar untuk $\tan x = 180^\circ$, 1 kitar untuk $\tan 2x = 90^\circ$.
1 cycle for $\tan x = 180^\circ$
1 cycle for $\tan 2x = 90^\circ$



7 (a) $a = 3, b = 2$

(b) 2

(c) Titik-titik maksimum/*Maximum points* $(45^\circ, 4)$, $(225^\circ, 4)$

Titik-titik minimum/*Minimum points* $(135^\circ, -2)$, $(315^\circ, -2)$.

(d) 4

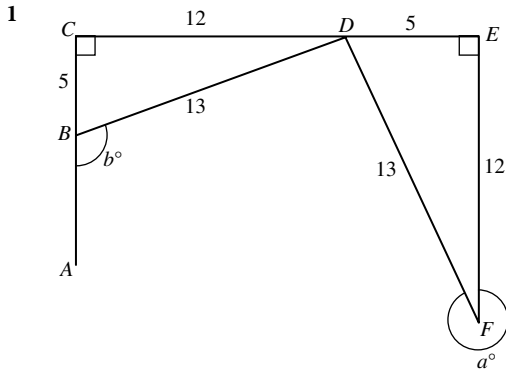
Praktis Sumatif

Kertas 1

- 1 A 2 B 3 A 4 D 5 B
6 D 7 C 8 D 9 D 10 B

Kertas 2

Bahagian/Section A



(a) $\cos/\cos a^\circ = \cos/\cos (360^\circ - a^\circ)$
 $= \frac{12}{13}$

(b) $\sin b^\circ = \sin(180^\circ - b^\circ)$
 $= \frac{12}{13}$

2 $RP = \sqrt{24^2 + 7^2}$
 $= 25 \text{ cm}$

$\cos/\cos \theta = \cos/\cos(360^\circ - \theta)$
 $= \frac{24}{25}$

Positif sebab θ dalam sukuan keempat.
 Positive because θ is in the fourth quadrant.

$\cos/\cos^{-1} \frac{24}{25} = 16.26^\circ$

$\theta = 360^\circ - 16.26^\circ$
 $= 343.74^\circ$

$\cos/\cos \theta = \frac{24}{25}$, $\theta = 343^\circ 44'$ atau /or 343.74°

3 $AC = \frac{16}{\sin 62} = 18.12 \text{ m}$, $BC = \frac{16}{\sin 21} = 44.65 \text{ m}$

$AB = 8.507 + 41.68 = 50.187 \text{ m}$

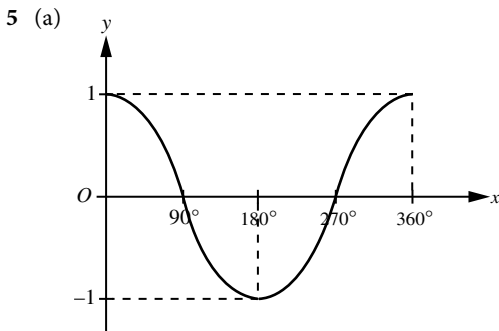
Perimeter = $18.12 + 44.65 + 50.187$
 $= 112.957$
 $= 112.96 \text{ cm}$

4 (a) Fungsi sinus/Sine function

(b) $y = 5 \sin 3x - 2$

(c) $-7 \leq y \leq 3$

Bahagian/Section B



(b) $y = \cos/\cos x$

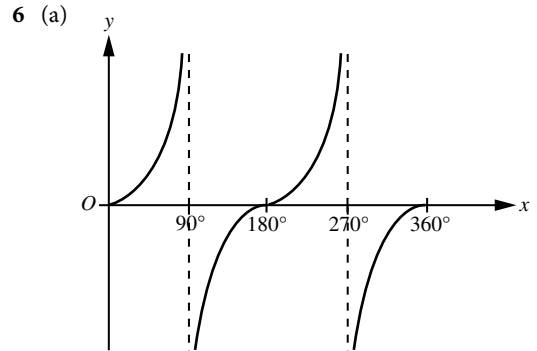
(c) 1

(d) 360°

(e) $(0^\circ, 1), (360^\circ, 1)$

(f) $(180^\circ, -1)$

(g) $x = 180^\circ$



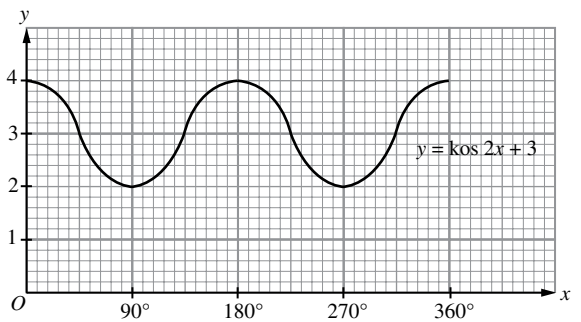
(b) $y = \tan x$

(c) $x = 90^\circ, x = 270^\circ$

(d) 180°

(e) $0^\circ, 180^\circ, 360^\circ$

7



(a) $2 \leq y \leq 4$

(b) $(0^\circ, 4), (180^\circ, 4), (360^\circ, 4)$

(c) $(90^\circ, 2), (270^\circ, 2)$

(d) 4

(e) $x = 180^\circ$

8 (a) Fungsi kosinus/Cosine function

(b) $y = -3 \cos/\cos 2x$

(c) $y = 3 \cos/\cos 2x + 2$

(d) $-1 \leq y \leq 5$

(e) Tidak sama/Not the same.

$y = 3 \cos/\cos 2x - 2$

(f) $-5 \leq y \leq 1$