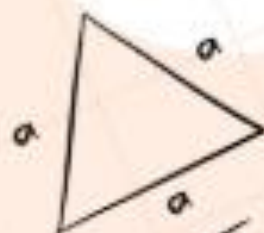


$$= \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

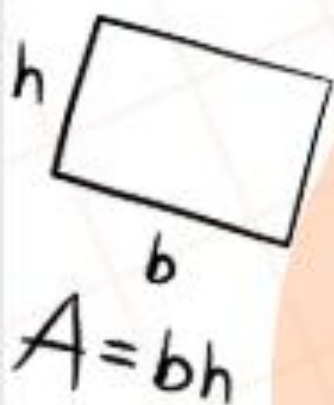


$$A = \frac{\sqrt{3}}{4} a^2$$

MATEMATIK SPM 2025

# MATRIKS

## KERTAS I



GURU ADIWIRA KEBANGSAAN

### Soalan 1

$$2\begin{bmatrix} 2 & 3 \\ 1 & 2 \end{bmatrix} - \begin{bmatrix} 4 & -7 \\ -1 & 3 \end{bmatrix} + \begin{bmatrix} -1 & 4 \\ 5 & 2 \end{bmatrix} =$$

A  $\begin{bmatrix} -1 & 17 \\ 8 & 3 \end{bmatrix}$

B  $\begin{bmatrix} -1 & 17 \\ 7 & 1 \end{bmatrix}$

C  $\begin{bmatrix} -1 & 14 \\ 8 & 1 \end{bmatrix}$

D  $\begin{bmatrix} -1 & 3 \\ 6 & 3 \end{bmatrix}$

### Soalan 2

Diberi bahawa matriks  $K = \begin{bmatrix} -13+x \\ 3 \\ 20 \end{bmatrix}$  dan matriks  $L = \begin{bmatrix} -3 \\ 4y-x \end{bmatrix}$ .

Cari nilai  $x$  dan nilai  $y$  jika  $K = L$ .

*It is given that matrix  $K = \begin{bmatrix} -13+x \\ 3 \\ 20 \end{bmatrix}$  and matrix  $L = \begin{bmatrix} -3 \\ 4y-x \end{bmatrix}$ .*

*Find the value of  $x$  and the value of  $y$  if  $K = L$ .*

A  $x = -4, y = -6$

B  $x = -4, y = 4$

C  $x = 4, y = 4$

D  $x = 4, y = 6$

### Soalan 3

Diberi persamaan matriks

*Given the matrix equation*

$$5[3p \quad -9] + q[-4 \quad 1] = [29 \quad -41]$$

Cari nilai  $3p + q$

*Find the value of  $3p + q$*

A. 10

B. 12

C. 13

D. 19

**Soalan 4**

Diberi  $\begin{pmatrix} 13 & 0 \\ 6 & -5 \end{pmatrix} - 2M = 3 \begin{pmatrix} 1 & -\frac{2}{3} \\ 2 & -3 \end{pmatrix}$ .

Cari matriks  $M$ .

Find matrix  $M$ .

Given  $\begin{pmatrix} 13 & 0 \\ 6 & -5 \end{pmatrix} - 2M = 3 \begin{pmatrix} 1 & -\frac{2}{3} \\ 2 & -3 \end{pmatrix}$ .

**A**  $\begin{pmatrix} -5 & -1 \\ 0 & -2 \end{pmatrix}$

**B**  $\begin{pmatrix} -5 & -1 \\ 0 & -7 \end{pmatrix}$

**C**  $\begin{pmatrix} 5 & 1 \\ 0 & 2 \end{pmatrix}$

**D**  $\begin{pmatrix} 8 & -1 \\ 6 & -7 \end{pmatrix}$

**Soalan 5**

$$\frac{1}{4} \begin{pmatrix} 8 & -4 \\ -12 & 16 \end{pmatrix} - \begin{pmatrix} 2 & -2 \\ -4 & 1 \end{pmatrix} + \begin{pmatrix} -1 & 2 \\ -3 & -7 \end{pmatrix} =$$

**A**  $\begin{pmatrix} -1 & 3 \\ -2 & 4 \end{pmatrix}$

**B**  $\begin{pmatrix} -1 & 3 \\ 2 & -4 \end{pmatrix}$

**C**  $\begin{pmatrix} -1 & 0 \\ -2 & -4 \end{pmatrix}$

**D**  $\begin{pmatrix} -1 & 3 \\ -2 & -4 \end{pmatrix}$

**Soalan 6**

Diberi

Given

$$\begin{pmatrix} 3 \\ m \end{pmatrix} - 4 \begin{pmatrix} -2 \\ 2 \end{pmatrix} = \begin{pmatrix} n \\ -5 \end{pmatrix}$$

Hitung nilai  $m$  dan  $n$ .

Find the value of  $m$  and  $n$ .

**A**  $m = 3, n = 11$

**B**  $m = -13, n = 11$

**C**  $m = -5, n = -13$

**D**  $m = 3, n = -5$

**Soalan 7**

Diberi

*Given*

$$\begin{pmatrix} 3 & x \\ 2y-7 & 8 \end{pmatrix} + \begin{pmatrix} 2 & 9 \\ -1 & 0 \end{pmatrix} = \begin{pmatrix} 5 & 4 \\ -12 & 8 \end{pmatrix}$$

Cari nilai  $x$  dan  $y$ .*Find the value of  $x$  and  $y$ .*

A  $x = -5, y = -2$

B  $x = -5, y = 2$

C  $x = 5, y = -2$

D  $x = 5, y = 2$

**Soalan 8**

$$3 \begin{pmatrix} 4 & 3 \\ 2 & -1 \end{pmatrix} - \begin{pmatrix} 2 & 0 \\ -2 & 8 \end{pmatrix} =$$

A  $\begin{pmatrix} 10 & 9 \\ 4 & 5 \end{pmatrix}$

B  $\begin{pmatrix} 14 & 9 \\ 8 & 8 \end{pmatrix}$

C  $\begin{pmatrix} 10 & 9 \\ 8 & -11 \end{pmatrix}$

D  $\begin{pmatrix} 12 & 9 \\ 4 & 11 \end{pmatrix}$

**Soalan 9**

Jika  $\frac{1}{2} \begin{pmatrix} -8 & 2 \\ 4 & 4 \end{pmatrix} - 2Q = \begin{pmatrix} 4 & -5 \\ 6 & 2 \end{pmatrix}$ , maka  $Q$  ialah

If  $\frac{1}{2} \begin{pmatrix} -8 & 2 \\ 4 & 4 \end{pmatrix} - 2Q = \begin{pmatrix} 4 & -5 \\ 6 & 2 \end{pmatrix}$ , then  $Q$  is

A  $\begin{pmatrix} -4 & 3 \\ -2 & 1 \end{pmatrix}$

B  $\begin{pmatrix} -8 & 6 \\ -4 & 2 \end{pmatrix}$

C  $\begin{pmatrix} -8 & -4 \\ -4 & -2 \end{pmatrix}$

D  $\begin{pmatrix} -4 & -2 \\ -2 & 1 \end{pmatrix}$

**Soalan 10**

Diberi matriks  $M = \frac{1}{2} \begin{pmatrix} 12 & p \\ -10 & 4 \end{pmatrix}$  dan matriks  $N = \begin{pmatrix} 6 & 3 \\ p+q & 2 \end{pmatrix}$ .

Hitung nilai  $q$  jika  $M = N$ .

Given matrix  $M = \frac{1}{2} \begin{pmatrix} 12 & p \\ -10 & 4 \end{pmatrix}$  and matrix  $N = \begin{pmatrix} 6 & 3 \\ p+q & 2 \end{pmatrix}$ .

Calculate the value of  $q$  if  $M = N$ .

- A -8
- B -11
- C -13
- D -16

**Soalan 11**

Diberi  $P = \begin{pmatrix} 1 & -4 \\ -1 & 2 \end{pmatrix}$  dan  $Q = \begin{pmatrix} 1 & 2x \\ -1 & 2 \end{pmatrix}$ .

Given  $P = \begin{pmatrix} 1 & -4 \\ -1 & 2 \end{pmatrix}$  and  $Q = \begin{pmatrix} 1 & 2x \\ -1 & 2 \end{pmatrix}$ .

Jika  $P = Q$ , hitung nilai  $x$ .

If  $P = Q$ , calculate the value of  $x$ .

- A -2
- B  $-\frac{1}{2}$
- C  $\frac{1}{2}$
- D 2

**Soalan 12**

Diberi  $\begin{pmatrix} -x \\ 9 \\ 4 \end{pmatrix} = \begin{pmatrix} 5 \\ 3y \\ 4 \end{pmatrix}$ , hitung nilai  $x$  dan  $y$ .

Given  $\begin{pmatrix} -x \\ 9 \\ 4 \end{pmatrix} = \begin{pmatrix} 5 \\ 3y \\ 4 \end{pmatrix}$ , calculate the values of  $x$  and  $y$ .

- A  $x = -5, y = 3$
- B  $x = 3, y = -5$
- C  $x = 5, y = 9$
- D  $x = 9, y = 5$

Soalan 13

Diberi  $\begin{pmatrix} 13 & 0 \\ 6 & -5 \end{pmatrix} - 2R = \begin{pmatrix} 3 & -2 \\ 6 & -9 \end{pmatrix}$ .

Cari matriks  $R$ .

Given  $\begin{pmatrix} 13 & 0 \\ 6 & -5 \end{pmatrix} - 2R = \begin{pmatrix} 3 & -2 \\ 6 & -9 \end{pmatrix}$ .

Find matrix  $R$ .

A  $\begin{pmatrix} 5 & 1 \\ 0 & -2 \end{pmatrix}$

B  $\begin{pmatrix} 5 & 1 \\ 0 & -7 \end{pmatrix}$

C  $\begin{pmatrix} 5 & 1 \\ 0 & 2 \end{pmatrix}$

D  $\begin{pmatrix} 8 & -1 \\ 6 & -7 \end{pmatrix}$

Soalan 14

Selesaikan penambahan matriks berikut.

Complete the addition of the following matrices.

$$\begin{pmatrix} 6 & 0 \\ 3 & 2 \\ -2 & -5 \end{pmatrix} + \begin{pmatrix} 4 & 0 \\ 3 & 2 \\ -2 & -5 \end{pmatrix}$$

A  $\begin{pmatrix} -10 & 0 \\ 6 & -4 \\ -4 & 10 \end{pmatrix}$

C  $\begin{pmatrix} 0 & 10 \\ 4 & 6 \\ -10 & -4 \end{pmatrix}$

B  $\begin{pmatrix} 10 & 0 \\ 6 & 4 \\ -4 & -10 \end{pmatrix}$

D  $\begin{pmatrix} 10 & 10 \\ 0 & -4 \\ 1 & 5 \end{pmatrix}$

Soalan 15

Jika  $p \begin{pmatrix} 8 \\ 3 \end{pmatrix} - 2 \begin{pmatrix} 0 \\ 6 \end{pmatrix} = 2 \begin{pmatrix} 4p \\ -3 \end{pmatrix}$ . Cari nilai  $p$ .

If  $p \begin{pmatrix} 8 \\ 3 \end{pmatrix} - 2 \begin{pmatrix} 0 \\ 6 \end{pmatrix} = 2 \begin{pmatrix} 4p \\ -3 \end{pmatrix}$ . Find the value of  $p$ .

A 0

B 2

C -6

D 6

**Soalan 16**

Diberi matriks  $P = \begin{bmatrix} y+1 & -8 & 2x-1 \end{bmatrix}$  dan  $Q = \begin{bmatrix} -4 & x+y & -7 \end{bmatrix}$ . Jika matriks  $P = Q$ , cari nilai  $x$  dan  $y$ .

Given matrix  $P = \begin{bmatrix} y+1 & -8 & 2x-1 \end{bmatrix}$  and  $Q = \begin{bmatrix} -4 & x+y & -7 \end{bmatrix}$ . If the matrix  $P = Q$ , find the value of  $x$  and  $y$ .

- A  $x = -3, y = -3$
- B  $x = -3, y = -5$
- C  $x = 3, y = 4$
- D  $x = 3, y = 5$

**Soalan 17**

$$\begin{pmatrix} 7 & -2 & 5 \end{pmatrix} - 2 \begin{pmatrix} -6 & 4 & -8 \end{pmatrix} + 3 \begin{pmatrix} 9 & 5 & -1 \end{pmatrix} =$$

- A  $\begin{pmatrix} 46 & 5 & 18 \end{pmatrix}$
- B  $\begin{pmatrix} 43 & 9 & -4 \end{pmatrix}$
- C  $\begin{pmatrix} 32 & 5 & 12 \end{pmatrix}$
- D  $\begin{pmatrix} 22 & 9 & 0 \end{pmatrix}$

**Soalan 18**

$$\begin{pmatrix} 3 & -4 \\ 2 & 5 \end{pmatrix} + \begin{pmatrix} -1 & 6 \\ 3 & 2 \end{pmatrix} - 2 \begin{pmatrix} 2 & 3 \\ 1 & 2 \end{pmatrix} =$$

- A  $\begin{pmatrix} -6 & -4 \\ 3 & 3 \end{pmatrix}$
- B  $\begin{pmatrix} -2 & -4 \\ 3 & 3 \end{pmatrix}$
- C  $\begin{pmatrix} -2 & -8 \\ 7 & 11 \end{pmatrix}$
- D  $\begin{pmatrix} 6 & 8 \\ 7 & 11 \end{pmatrix}$

**Soalan 19**

Diberi bahawa  $G = \begin{pmatrix} -1 & 9 & 0 \\ 6 & 8 & 4 \\ -5 & -3 & 2 \end{pmatrix}$  dan  $H = \begin{pmatrix} 6 & 2 \\ -5 & -3 \\ 4 & -1 \end{pmatrix}$ .

Hitung nilai  $g_{32} + h_{12}$ .

He is given that  $G = \begin{pmatrix} -1 & 9 & 0 \\ 6 & 8 & 4 \\ -5 & -3 & 2 \end{pmatrix}$  and  $H = \begin{pmatrix} 6 & 2 \\ -5 & -3 \\ 4 & -1 \end{pmatrix}$ .

Calculate the value of  $g_{32} + h_{12}$ .

- A -9
- B -8
- C -2
- D -1

**Soalan 20**

$$2[2 \ -3] - \frac{1}{3}[6 \ 9] + [-7 \ -5] =$$

- A  $[-5 \ -14]$
- B  $[-5 \ -4]$
- C  $[9 \ -14]$
- D  $[9 \ -4]$

**Soalan 21**

Diberi matriks  $A = \begin{pmatrix} -2 & 5 & 3 \\ 3 & -10 & -6 \\ 5 & 9 & 4 \end{pmatrix}$ . Hitung nilai  $a_{22} - a_{13} + 2(a_{31})$ .

Given that matrix  $A = \begin{pmatrix} -2 & 5 & 3 \\ 3 & -10 & -6 \\ 5 & 9 & 4 \end{pmatrix}$ . Calculate the value of  $a_{22} - a_{13} + 2(a_{31})$ .

- A 2
- B -7
- C -3
- D 6

**Soalan 22**

Diberi  $\begin{pmatrix} 2 & 8 \\ b & 0 \end{pmatrix} - 3\begin{pmatrix} 1 & 3 \\ -2 & 0 \end{pmatrix} = \begin{pmatrix} -1 & c \\ -2 & 0 \end{pmatrix}$ , cari nilai  $b$  dan  $c$ .

Given  $\begin{pmatrix} 2 & 8 \\ b & 0 \end{pmatrix} - 3\begin{pmatrix} 1 & 3 \\ -2 & 0 \end{pmatrix} = \begin{pmatrix} -1 & c \\ -2 & 0 \end{pmatrix}$ , find the values of  $b$  and  $c$ .

- A  $b = -8, c = -1$
- B  $b = -8, c = 5$
- C  $b = -4, c = 5$
- D  $b = -2, c = -1$

**Soalan 23**

Diberi matriks  $B = \begin{bmatrix} 1 & -16 \\ 20 & 4 \end{bmatrix}$ , hitung nilai  $b_{12} + b_{21}$ .

Given matrix  $B = \begin{bmatrix} 1 & -16 \\ 20 & 4 \end{bmatrix}$ , calculate the value of  $b_{12} + b_{21}$ .

- A 36
- B 20
- C -36
- D -16

**Soalan 24**

$$\begin{pmatrix} 3 & 2 \\ 6 & 4 \end{pmatrix} + \begin{pmatrix} 5 & 7 \\ 4 & 1 \end{pmatrix} - \begin{pmatrix} -1 & 3 \\ 8 & 1 \end{pmatrix} =$$

- |  |  |
|--|--|
| A $\begin{pmatrix} 7 & 6 \\ 2 & 2 \end{pmatrix}$ | C $\begin{pmatrix} 9 & 6 \\ 2 & 4 \end{pmatrix}$ |
| B $\begin{pmatrix} 9 & 6 \\ 2 & 6 \end{pmatrix}$ | D $\begin{pmatrix} 7 & 9 \\ 2 & 6 \end{pmatrix}$ |

## **Jawapan**

**1.**

**2.**

**3.**

**4. c**

**5.d**

**6.a**

**7.a**

**8.c**

**9.a**

**10.b**

**11.a**

**12.a**

**13.a**

**14.b**

**15.b**

**16.b**

**17.**

**18.b**

**19.**

**20.a**

**21.c**

**22.a**

**23.c**

**24.c**