**MODUL 2**

**OPKRASI ALJABAR MATRIKS**

**BAGIAN SATU**



**SMK KOMPUTAMA MAJENANG TAHUN PELAJARAN 2020/2021**

# MATRIKS

**OPERASI ALJABAR MATRIKS**

# Operasi Penjumlahan

## Operasi Penjumlahan pada matriks hanya dapat dilakukan apabila matriks – matriksnya mempunyai ordo sama.

*a*1

*a*2 

*b*1

*b*2 

*A*  *a a*  *B*  *b b* 

 3 4   3 4 

*a*1 *a*2  *b*1 *b*2  *a*1  *b*1

*a*2  *b*2 

*A*  *B*  *a*

*a*   *b*

*b*   *a*  *b*

*a*  *b* 

 3

## Contoh Soal 1:

4   3

4   3 3

4 4 

## 3 5

11

3

## Diketahui matriks A = 7 2 , matriks B = 7

9  . Hitung A + B!

##  

Jawab:

## 3 5  11  3 

3 11

 

## 5  (3) 14 2 

A + B = 7

## 2   7

9   7  (7)

## 2  9

   0

11

       

# Operasi Pengurangan

## Pengurangan dua matriks harus memiliki ordo sama

*a*1 *a*2 

*b*1 *b*2 

*A*  *a a* 

, *B*  *b b* 

 3 4 

*a*1

 3 4 

*a*2  *b*1 *b*2  *a*1  *b*1

*a*2  *b*2 

*A*  *B*  *a*

*a*   *b*

*b*   *a*  *b*

*a*  *b* 

 3

## Contoh Soal 2:

4   3

4   3 3

4 4 

## 4 0 6 4

Diketahui A =  3 6 ; B = 2 4 . Hitung A – B!

##    

Jawab:

## 4 0 6 4 46 04 10  4

A – B =  3

## 62

4 =  32

## 64 =  1 2 

    

## Contoh Soal 3 :

  

## 4

6  2 4

## Tentukan matriks A dari persamaan matriks berikut

*A*1

## 4  3 1

Jawab:

## 2

A =

## 44

6  24

## =





46

##  2

=



2

5







## 2

  

##   

3

1

1

  

4

##  31

1(4)  

# Sifat-sifat Penjumlahan dan Pengurangan Matriks

## Misalkan A, B, dan C matriks-matriks dengan ordo sama maka berlaku sifat-sifat berikut:

1. A + B = B + A (Komutatif )

## A + (B + C) = (A + B) + C (Asosiatif )

1. A – B ≠ B – A (Anti Komutatif )

**Latihan Soal 2**

## Diketahui matriks :

1 2

## B =  

3

2

 

## B + C

* 1. Bt + C Jawab

0

## C = 

3



1 

## 3 . Hitung :



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## Diketahui matriks-matriks berikut.

 1  2

##  3 4

 5 5 

*A*   2

## 1  ;

*B*   2

## 1 ; dan *C*   2 3 



##  4



## 1 



##  6



## 3



##  1



##  4

Tentukanlah:

## A + B c. A + (B + C)

* 1. A + Bt d. (A + Bt) + C

## Jawab

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## Tentukan hasil penjumlahan dari matriks berikut :

a.  0  5  b.  6 81 4 

## 4

4

7

## 4  3

2

##    

Jawab

##    

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## Tentukan hasil penjumlahan dari matriks berikut :







a. 4 05 4

b.  *x y*   4*x*

4 *y* 

##    

3

1

0

3

   

## Jawab

 *x* 3 *y* 3*x*

 *y*

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

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## Tentukan hasil pengurangan dari matriks berikut :

4 0

## 5  4

 *x y* 

4*x*

4 *y* 

## 3

1  0 3 

##  *x*

3 *y*  3*x*

 *y*

##    

Jawab

##    

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## Diketahui : *A*   4



6 8

, *B* 

1

3





## 0  2

, *C* 



3

2





## 0  2

, *D* 



4



3

## Hitung :

3 

##  4

 2  

## A – B c. (A + B) – C

b. A – (D – B) d. (A – B) + (C – D)

## Jawab

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## Tentukan matriks A, B dari persamaan matriks berikut :

4

## 1 5 0

 5 1 2 3

## *A* 0

6  6 1

## b. 2 0 *P*  0 5



## Jawab

  

##    

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## Tentukan matriks P, S dari persamaan matriks berikut :

 4 2 5 6 2 0 1 2 

## a. *B*1

3  2 0

## b. 1

3  5

6*S*

## 

Jawab

##   

   

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## Diketahui matriks-matriks berikut.

 1 3

## 

*A*  1 0

## 

5

 4

2 

## 

4  dan

##  3



 1 3

## 

*B*  1 0

## 

5

 4

2 

## 

4 

##  3



Tentukanlah matriks C yang memenuhi 3C - 2A = B. Jawab

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##  5 3   *c*

*b*  14

## 14 

1. Diketahui penjumlahan matriks :

##  2 *a*  + *d*  4 = 2  2

Nilai a, b, c, dan d

## berturut-turut adalah .......

Jawab

##      

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## .....................................................................................................................................................

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## .....................................................................................................................................................

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