

# PEMBAHASAN SOAL UJIAN KUIS APLIKASI KOMPUTER III

MATERI : APLIKASI MATRIKS

command the brilliance

**Maple™ 10**

Harnessing the Power of Mathematics.

## Kunci Kuis A

Soal	Kunci
<p>1. Misalkan</p> $A = \begin{bmatrix} 2 & -1 & 3 \\ 0 & 4 & 5 \\ -2 & 1 & 4 \end{bmatrix} \quad B = \begin{bmatrix} 8 & -3 & -5 \\ 0 & 1 & 2 \\ 4 & -7 & 6 \end{bmatrix} \quad C = \begin{bmatrix} 2 & -1 & 3 \\ 0 & 4 & 5 \\ -2 & 1 & 4 \end{bmatrix}$ <p><math>a = 4 \quad b = -7</math></p> <p>Tunjukkan bahwa:</p> <p>(a) <math>A + (B+C) = (A+B) + C</math>            (b) <math>(AB)C = A(BC)</math>            (c) <math>(a+b)C = aC + bC</math>            (d) <math>a(B-C) = aB - bC</math></p>	<pre>&gt; restart;</pre> <pre>&gt; with(linalg):</pre> <pre>&gt; A:=matrix(3,3,[2,-1,3,0,4,5,-2,1,4]):</pre> <pre>&gt; B:=matrix(3,3,[8,-3,-5,0,1,2,4,-7,6]):</pre> <pre>&gt; C:=matrix(3,3,[2,-1,3,0,4,5,-2,1,4]):</pre> <pre>&gt; a:=4:</pre> <pre>&gt; b:=7:</pre> <pre>&gt; evalm(A+(B+C))= evalm((A+B)+C);</pre> $\begin{bmatrix} 12 & -5 & 1 \\ 0 & 9 & 12 \\ 0 & -5 & 14 \end{bmatrix}$ <pre>&gt; evalm((A.B).C)= evalm(A.(B.C));</pre> $\begin{bmatrix} 44 & -134 & -32 \\ -36 & -106 & 57 \\ -72 & -48 & 39 \end{bmatrix}$ <pre>&gt; evalm((a+b).C)= evalm(a.C+b.C);</pre> $\begin{bmatrix} 22 & -11 & 33 \\ 0 & 44 & 55 \\ -22 & 11 & 44 \end{bmatrix}$ <pre>&gt; evalm(a.(B-C))= evalm(a.B-a.C);</pre> $\begin{bmatrix} 24 & -8 & -32 \\ 0 & -12 & -12 \\ 24 & -32 & 8 \end{bmatrix}$
<p>2. Tentukan semua nilai a, b sehingga A dan B keduanya tidak dapat dibalik</p>	<pre>&gt; restart;</pre> <pre>&gt; with(linalg):</pre> <pre>&gt; A:=matrix(2,2,[a+b-1,0,0,3]):</pre>

Soal	Kunci
$A = \begin{bmatrix} a+b-1 & 0 \\ 0 & 3 \end{bmatrix} \quad B = \begin{bmatrix} 5 & 0 \\ 0 & 2a-3b-7 \end{bmatrix}$	<pre> &gt; B:=matrix(2,2,[5,0,0,2*a-3*b-7]): &gt; det(A); 3 a + 3 b - 3 &gt; det(B); 10 a - 15 b - 35  &gt; x:=matrix(2,2,[3,3,10,-15]); x := <math>\begin{bmatrix} 3 &amp; 3 \\ 10 &amp; -15 \end{bmatrix}</math> &gt; x1:=matrix(2,2,[3,3,35,-15]); x1 := <math>\begin{bmatrix} 3 &amp; 3 \\ 35 &amp; -15 \end{bmatrix}</math> &gt; x2:=matrix(2,2,[3,3,10,35]); x2 := <math>\begin{bmatrix} 3 &amp; 3 \\ 10 &amp; 35 \end{bmatrix}</math> &gt; a:=(det(x1)/det(x)); a := 2 &gt; b:=(det(x2)/det(x)); b := -1 </pre>
<p>3. Tentukan semua nilai <math>\lambda</math> dimana <math>\det(A) = 0</math></p> $\begin{bmatrix} \lambda - 2 & 1 \\ -5 & \lambda + 4 \end{bmatrix}$	<pre> &gt; restart; &gt; with(linalg): &gt; A:=matrix(2,2,[lambda-2,1,-5,lambda+4]); A := <math>\begin{bmatrix} \lambda - 2 &amp; 1 \\ -5 &amp; \lambda + 4 \end{bmatrix}</math> &gt; det(A); <math>\lambda^2 + 2\lambda - 3</math> &gt; solve(%); 1, -3 </pre>
<p>4. Diketahui:</p>	<pre> &gt; restart; &gt; with(linalg): &gt; A:=matrix(3,3,[2,0,0,8,1,0,-5,3,6]); </pre>

Soal	Kunci
$\begin{bmatrix} 2 & 0 & 0 \\ 8 & 1 & 0 \\ -5 & 3 & 6 \end{bmatrix}$ <p>Tentukan invers</p> <p>(a) Matriks Adjoin (b) Matriks elementer</p>	$A := \begin{bmatrix} 2 & 0 & 0 \\ 8 & 1 & 0 \\ -5 & 3 & 6 \end{bmatrix}$ <p>&gt; det(A);</p> $\begin{matrix} 1 \\ 2 \end{matrix}$ <p>&gt; adj(A);</p> $\begin{bmatrix} 6 & 0 & 0 \\ -48 & 12 & 0 \\ 29 & -6 & 2 \end{bmatrix}$ <p>&gt; invA:=1/det(A).adj(A); invA := <math>\frac{1}{12} \begin{bmatrix} 6 &amp; 0 &amp; 0 \\ -48 &amp; 12 &amp; 0 \\ 29 &amp; -6 &amp; 2 \end{bmatrix}</math></p> <p>&gt; inverse(A);</p> $\begin{bmatrix} \frac{1}{2} & 0 & 0 \\ -4 & 1 & 0 \\ \frac{29}{12} & \frac{-1}{2} & \frac{1}{6} \end{bmatrix}$ <p>&gt; A1:=matrix(3,6,[2,0,0,1,0,0,8,1,0,0,1,0,-5,3,6,0,0,1]);</p>

Soal	Kunci
	$A1 := \begin{bmatrix} 2 & 0 & 0 & 1 & 0 & 0 \\ 8 & 1 & 0 & 0 & 1 & 0 \\ -5 & 3 & 6 & 0 & 0 & 1 \end{bmatrix}$ <p data-bbox="1010 507 1317 539">&gt; gaussjrd(A1);</p> $\begin{bmatrix} 1 & 0 & 0 & \frac{1}{2} & 0 & 0 \\ 0 & 1 & 0 & -4 & 1 & 0 \\ 0 & 0 & 1 & \frac{29}{12} & \frac{-1}{2} & \frac{1}{6} \end{bmatrix}$ <p data-bbox="1010 790 1256 821">&gt; inverse(A);</p> $\begin{bmatrix} \frac{1}{2} & 0 & 0 \\ -4 & 1 & 0 \\ \frac{29}{12} & \frac{-1}{2} & \frac{1}{6} \end{bmatrix}$

### Kunci Kuis II

Soal	Kunci
<p data-bbox="188 1141 353 1173">1. Misalkan</p> $A = \begin{bmatrix} 2 & -1 & 3 \\ 0 & 4 & 5 \\ -2 & 1 & 4 \end{bmatrix} \quad B = \begin{bmatrix} 8 & -3 & -5 \\ 0 & 1 & 2 \\ 4 & -7 & 6 \end{bmatrix} \quad C =$ $\begin{bmatrix} 2 & -1 & 3 \\ 0 & 4 & 5 \\ -2 & 1 & 4 \end{bmatrix} a = 4 \quad b = -7$ <p data-bbox="232 1385 448 1417">buktikan bahwa:</p>	<pre data-bbox="1010 1141 2033 1385"> &gt; restart; &gt; with(linalg): Warning, the protected names norm and trace have been redefined and unprotected &gt; A:=matrix(3,3,[2,-1,3,0,4,5,-2,1,4]): &gt; B:=matrix(3,3,[8,-3,-5,0,1,2,4,-7,6]): &gt; C:=matrix(3,3,[2,-1,3,0,4,5,-2,1,4]): </pre>

Soal	Kunci
<p>(a) <math>a(BC) = (aB)C = B(aC)</math></p> <p>(b) <math>A(B - C) = AB - AC</math></p> <p>(c) <math>(B + C)A = BA + CA</math></p> <p>(d) <math>a(bC) = (ab)C</math></p>	<pre> &gt; a:=4: &gt; b:=7: &gt; evalm(a.(B.C));       [ 104  -100  -44 ]       [ -16   24   52 ]       [ -16 -104   4  ]  &gt; evalm((a.B).C);       [ 104  -100  -44 ]       [ -16   24   52 ]       [ -16 -104   4  ]  &gt; evalm(B.(a.C));       [ 104  -100  -44 ]       [ -16   24   52 ]       [ -16 -104   4  ]  &gt; evalm(A.(B-C));       [ 30  -25  -7 ]       [ 30  -52  -2 ]       [ 12  -31  21 ]  &gt; evalm(A.B-A.C); </pre>

Soal	Kunci
	$\begin{bmatrix} 30 & -25 & -7 \\ 30 & -52 & -2 \\ 12 & -31 & 21 \end{bmatrix}$ <p>&gt; <code>evalm((B+C).A);</code></p> $\begin{bmatrix} 24 & -28 & 2 \\ -14 & 27 & 53 \\ -16 & -16 & 16 \end{bmatrix}$ <p>&gt; <code>evalm(a.(b.C));</code></p> $\begin{bmatrix} 56 & -28 & 84 \\ 0 & 112 & 140 \\ -56 & 28 & 112 \end{bmatrix}$ <p>&gt; <code>evalm(a.(b.C));</code></p> $\begin{bmatrix} 56 & -28 & 84 \\ 0 & 112 & 140 \\ -56 & 28 & 112 \end{bmatrix}$
<p>2. Misalkan <math>p_1(x) = x^2 - 9</math>, <math>p_2(x) = x + 3</math> dan <math>p_3(x) = x - 3</math> serta <math>A = \begin{bmatrix} 3 &amp; 1 \\ 2 &amp; 1 \end{bmatrix}</math> dan <math>B = \begin{bmatrix} 8 &amp; -3 &amp; -5 \\ 0 &amp; 1 &amp; 2 \\ 4 &amp; -7 &amp; 6 \end{bmatrix}</math></p> <p>(a) Tunjukkan bahwa <math>p_1(A) = p_2(A).p_3(A)</math></p> <p>(b) Tunjukkan bahwa <math>p_1(B) = p_2(B).p_3(B)</math></p>	<p>&gt; <code>restart;</code></p> <p>&gt; <code>with(linalg):</code></p> <p>&gt; <code>A:=matrix(2,2,[3,1,2,1]);</code></p> $A := \begin{bmatrix} 3 & 1 \\ 2 & 1 \end{bmatrix}$

Soal	Kunci
	<pre> &gt; p1 := x -&gt; x^2-9*LinearAlgebra:- IdentityMatrix(2,2);       p1 := x → x<sup>2</sup> - 9 (LinearAlgebra:-IdentityMatrix) (2, 2) &gt; &gt; p2 := x -&gt; x+3*LinearAlgebra:-IdentityMatrix(2,2);       p2 := x → x + 3 (LinearAlgebra:-IdentityMatrix) (2, 2) &gt; p3 := x -&gt; x-3*LinearAlgebra:-IdentityMatrix(2,2);       p3 := x → x - 3 (LinearAlgebra:-IdentityMatrix) (2, 2) &gt; evalm(p1(A));       [ 2  4 ]       [ 8 -6 ] &gt; evalm(p2(A).p3(A));       [ 2  4 ]       [ 8 -6 ] </pre>
<p>3. Tentukan semua nilai <math>\lambda</math> dimana <math>\det(A) = 0</math></p> $\begin{bmatrix} \lambda - 4 & 0 & 0 \\ 0 & \lambda & 2 \\ 0 & 3 & \lambda - 1 \end{bmatrix}$	<pre> &gt; restart; &gt; with(linalg): &gt; A:=matrix(3,3,[lambda-4,0,0,0,lambda,2,0,3,lambda- 1]);       A := [ λ - 4  0  0 ]             [  0  λ  2 ]             [  0  3 λ - 1 ] &gt; det(A); </pre>

Soal	Kunci
	$(\lambda - 4)(\lambda^2 - \lambda - 6)$ <pre data-bbox="1010 263 1220 295">&gt; solve(%);</pre> $4, 3, -2$
<p>4. Diketahui:</p> $\begin{bmatrix} 2 & -3 & 5 \\ 0 & 1 & -3 \\ 0 & 0 & 2 \end{bmatrix}$ <p>Tentukan invers</p> <p>(a) Matriks Adjoin (b) Matriks elementer</p>	<pre data-bbox="1010 430 1758 534">&gt; restart; &gt; with(linalg): &gt; A:=matrix(3,3,[2,-3,5,0,1,-3,0,0,2]);</pre> $A := \begin{bmatrix} 2 & -3 & 5 \\ 0 & 1 & -3 \\ 0 & 0 & 2 \end{bmatrix}$ <pre data-bbox="1010 742 1702 805">&gt; A1:=matrix(3,6,[2,-3,5,1,0,0,0,1,-3,0,1,0,0,0,2,0,0,1]);</pre> $A1 := \begin{bmatrix} 2 & -3 & 5 & 1 & 0 & 0 \\ 0 & 1 & -3 & 0 & 1 & 0 \\ 0 & 0 & 2 & 0 & 0 & 1 \end{bmatrix}$ <pre data-bbox="1010 1029 1310 1085">&gt; &gt; gaussjord(A1);</pre>

Soal	Kunci
	$\begin{bmatrix} 1 & 0 & 0 & \frac{1}{2} & \frac{3}{2} & 1 \\ 0 & 1 & 0 & 0 & 1 & \frac{3}{2} \\ 0 & 0 & 1 & 0 & 0 & \frac{1}{2} \end{bmatrix}$ <pre data-bbox="1010 512 1261 544">&gt; inverse(A);</pre> $\begin{bmatrix} \frac{1}{2} & \frac{3}{2} & 1 \\ 0 & 1 & \frac{3}{2} \\ 0 & 0 & \frac{1}{2} \end{bmatrix}$

### Kunci Kuis III

Soal	Kunci
<p>5. Misalkan</p> $A = \begin{bmatrix} 2 & -1 & 3 \\ 0 & 4 & 5 \\ -2 & 1 & 4 \end{bmatrix} \quad B = \begin{bmatrix} 8 & -3 & -5 \\ 0 & 1 & 2 \\ 4 & -7 & 6 \end{bmatrix} \quad C =$ $\begin{bmatrix} 2 & -1 & 3 \\ 0 & 4 & 5 \\ -2 & 1 & 4 \end{bmatrix} \quad a = 4 \quad b = -7$ <p>buktikan bahwa:</p>	<pre data-bbox="1010 1118 2027 1390"> &gt; restart; &gt; with(linalg): Warning, the protected names norm and trace have been redefined and unprotected &gt; A:=matrix(3,3,[2,-1,3,0,4,5,-2,1,4]): &gt; B:=matrix(3,3,[8,-3,-5,0,1,2,4,-7,6]): &gt; C:=matrix(3,3,[2,-1,3,0,4,5,-2,1,4]): &gt; a:=4: </pre>

Soal	Kunci
<p>(a) <math>(A^T)^T = A</math>            (b) <math>(A+B)^T = A^T + B^T</math>            (c) <math>(aC)^T = aC^T</math>            (d) <math>(AB)^T = B^T A^T</math></p>	<pre>&gt; b:=7: &gt; evalm(transpose(transpose(A)));</pre> $\begin{bmatrix} 2 & -1 & 3 \\ 0 & 4 & 5 \\ -2 & 1 & 4 \end{bmatrix}$ <pre>&gt; evalm(transpose(A+B));</pre> $\begin{bmatrix} 10 & 0 & 2 \\ -4 & 5 & -6 \\ -2 & 7 & 10 \end{bmatrix}$ <pre>&gt; evalm(transpose(A)+transpose(B));</pre> $\begin{bmatrix} 10 & 0 & 2 \\ -4 & 5 & -6 \\ -2 & 7 & 10 \end{bmatrix}$ <pre>&gt; evalm(transpose(a.C));</pre> $\begin{bmatrix} 8 & 0 & -8 \\ -4 & 16 & 4 \\ 12 & 20 & 16 \end{bmatrix}$ <pre>&gt; evalm(transpose(A.B));</pre>

Soal	Kunci
	$\begin{bmatrix} 28 & 20 & 0 \\ -28 & -31 & -21 \\ 6 & 38 & 36 \end{bmatrix}$ <pre>&gt; evalm(transpose(B).transpose(A));</pre> $\begin{bmatrix} 28 & 20 & 0 \\ -28 & -31 & -21 \\ 6 & 38 & 36 \end{bmatrix}$
<p>6. Misalkan A adalah matriks <math>\begin{bmatrix} 3 &amp; 1 \\ 2 &amp; 1 \end{bmatrix}</math> pada setiap bagian, tentukan P(A)</p> <p>(a) <math>P(x) = x - 2</math></p> <p>(b) <math>P(x) = 2x^2 - x + 1</math></p> <p>(c) <math>P(x) = x^3 - 2x + 4</math></p>	<pre>&gt; restart;</pre> <pre>&gt; with(linalg):</pre> <pre>&gt; A:=matrix(2,2,[3,1,2,1]);</pre> $A := \begin{bmatrix} 3 & 1 \\ 2 & 1 \end{bmatrix}$ <pre>&gt; p1 := x -&gt; x-2*LinearAlgebra:-IdentityMatrix(2,2);</pre> $p1 := x \rightarrow x - 2 \text{ (LinearAlgebra:-IdentityMatrix) (2, 2)}$ <pre>&gt; p2 := x -&gt; 2*x^2-x+1*LinearAlgebra:-IdentityMatrix(2,2);</pre> $p2 := x \rightarrow 2x^2 - x + 1 \text{ (LinearAlgebra:-IdentityMatrix) (2, 2)}$ <pre>&gt; p3 := x -&gt; x^3-2*x+4*LinearAlgebra:-IdentityMatrix(2,2);</pre> $p3 := x \rightarrow x^3 - 2x + 4 \text{ (LinearAlgebra:-IdentityMatrix) (2, 2)}$ <pre>&gt; evalm(p1(A));</pre>

Soal	Kunci
	$\begin{bmatrix} 1 & 1 \\ 2 & -1 \end{bmatrix}$ <pre data-bbox="1010 320 1301 347">&gt; evalm(p2(A));</pre> $\begin{bmatrix} 20 & 7 \\ 14 & 6 \end{bmatrix}$ <pre data-bbox="1010 544 1301 571">&gt; evalm(p3(A));</pre> $\begin{bmatrix} 39 & 13 \\ 26 & 13 \end{bmatrix}$
<p>7. Selesaikan x pada:</p> $\begin{vmatrix} x & -1 \\ 3 & 1-x \end{vmatrix} = \begin{vmatrix} 1 & 0 & -3 \\ 2 & x & -6 \\ 1 & 3 & x-5 \end{vmatrix}$	<pre data-bbox="1010 675 1205 702">&gt; restart;</pre> <pre data-bbox="1010 710 1301 737">&gt; with(linalg):</pre> <pre data-bbox="1010 745 1585 772">&gt; A:=matrix(2,2,[x,-1,3,1-x]);</pre> $A := \begin{bmatrix} x & -1 \\ 3 & 1-x \end{bmatrix}$ <pre data-bbox="1010 927 1794 954">&gt; B:=matrix(3,3,[1,0,-3,2,x,-6,1,3,x-5]);</pre> $B := \begin{bmatrix} 1 & 0 & -3 \\ 2 & x & -6 \\ 1 & 3 & x-5 \end{bmatrix}$ <pre data-bbox="1010 1169 1182 1197">&gt; det(A);</pre> $x - x^2 + 3$ <pre data-bbox="1010 1289 1182 1316">&gt; det(B);</pre> $x^2 - 2x$

Soal	Kunci
	<pre>&gt; det(A)-det(B);</pre> $3x - 2x^2 + 3$ <pre>&gt; solve(%);</pre> $\frac{3}{4} - \frac{1}{4}\sqrt{33}, \frac{3}{4} + \frac{1}{4}\sqrt{33}$
<p>8. Diketahui:</p> $\begin{bmatrix} 2 & 0 & 3 \\ 0 & 3 & 2 \\ -2 & 0 & -4 \end{bmatrix}$ <p>Tentukan invers</p> <p>(a) Matriks Adjoin</p> <p>(b) Matriks elementer</p>	<pre>&gt; restart;</pre> <pre>&gt; with(linalg):</pre> <pre>&gt; A:=matrix(3,3,[2,0,3,0,3,2,-2,0,-4]);</pre> $A := \begin{bmatrix} 2 & 0 & 3 \\ 0 & 3 & 2 \\ -2 & 0 & -4 \end{bmatrix}$ <pre>&gt;</pre> <pre>A1:=matrix(3,6,[2,0,3,1,0,0,0,3,2,0,1,0,0,0,1,0,0,1]);</pre> <pre>;</pre> $A1 := \begin{bmatrix} 2 & 0 & 3 & 1 & 0 & 0 \\ 0 & 3 & 2 & 0 & 1 & 0 \\ 0 & 0 & 1 & 0 & 0 & 1 \end{bmatrix}$ <pre>&gt; gaussjord(A1);</pre> $\begin{bmatrix} 1 & 0 & 0 & \frac{1}{2} & 0 & \frac{-3}{2} \\ 0 & 1 & 0 & 0 & \frac{1}{3} & \frac{-2}{3} \\ 0 & 0 & 1 & 0 & 0 & 1 \end{bmatrix}$

Soal	Kunci
	<pre data-bbox="1008 175 1265 207">&gt; inverse(A);</pre> $\begin{bmatrix} 2 & 0 & \frac{3}{2} \\ \frac{2}{3} & \frac{1}{3} & \frac{2}{3} \\ -1 & 0 & -1 \end{bmatrix}$

### Kunci Kuis IV

Soal	Kunci
<p data-bbox="185 730 358 762">9. Misalkan</p> $A = \begin{bmatrix} 3 & 1 \\ 5 & 2 \end{bmatrix} \quad B = \begin{bmatrix} 2 & -3 \\ 4 & 4 \end{bmatrix} \quad C = \begin{bmatrix} 2 & 0 \\ 0 & 3 \end{bmatrix}$ <p data-bbox="224 837 448 869">buktikan bahwa:</p> <p data-bbox="224 869 593 1013">(a) <math>(A^{-1})^{-1} = A</math>  (b) <math>(B^T)^{-1} = (B^{-1})^T</math>  (c) <math>(AB)^{-1} = B^{-1}A^{-1}</math>  (d) <math>(ABC)^{-1} = C^{-1}B^{-1}A^{-1}</math></p>	<pre data-bbox="1008 734 1209 766">&gt; restart;</pre> <pre data-bbox="1008 766 1299 798">&gt; with(linalg):</pre> <p data-bbox="1008 805 1937 869">Warning, the protected names norm and trace have been redefined and unprotected</p> <pre data-bbox="1008 877 1534 909">&gt; A:=matrix(2,2,[3,1,5,2]);</pre> $A := \begin{bmatrix} 3 & 1 \\ 5 & 2 \end{bmatrix}$ <pre data-bbox="1008 1061 1556 1093">&gt; B:=matrix(2,2,[2,-3,4,4]);</pre> $B := \begin{bmatrix} 2 & -3 \\ 4 & 4 \end{bmatrix}$ <pre data-bbox="1008 1244 1534 1276">&gt; C:=matrix(2,2,[2,0,0,3]);</pre> $C := \begin{bmatrix} 2 & 0 \\ 0 & 3 \end{bmatrix}$

Soal	Kunci
	<p>&gt; <code>inverse(inverse(A));</code></p> $\begin{bmatrix} 3 & 1 \\ 5 & 2 \end{bmatrix}$ <p>&gt; <code>inverse(transpose(B));</code></p> $\begin{bmatrix} \frac{1}{5} & \frac{-1}{5} \\ \frac{3}{20} & \frac{1}{10} \end{bmatrix}$ <p>&gt; <code>transpose(inverse(B));</code></p> $\begin{bmatrix} \frac{1}{5} & \frac{-1}{5} \\ \frac{3}{20} & \frac{1}{10} \end{bmatrix}$ <p>&gt; <code>inverse(A.B);</code></p> $\begin{bmatrix} \frac{-7}{20} & \frac{1}{4} \\ \frac{-9}{10} & \frac{1}{2} \end{bmatrix}$ <p>&gt; <code>evalm(inverse(B).inverse(A));</code></p> $\begin{bmatrix} \frac{-7}{20} & \frac{1}{4} \\ \frac{-9}{10} & \frac{1}{2} \end{bmatrix}$

Soal	Kunci
	<pre data-bbox="1010 177 1339 204">&gt; inverse(A.B.C);</pre> $\begin{bmatrix} \frac{-7}{40} & \frac{1}{8} \\ \frac{-3}{10} & \frac{1}{6} \end{bmatrix}$ <pre data-bbox="1010 443 1816 470">&gt; evalm(inverse(C).inverse(B).inverse(A));</pre> $\begin{bmatrix} \frac{-7}{40} & \frac{1}{8} \\ \frac{-3}{10} & \frac{1}{6} \end{bmatrix}$
<p data-bbox="188 746 981 842">10. Misalkan A adalah matriks <math>\begin{bmatrix} 2 &amp; 0 \\ 4 &amp; 1 \end{bmatrix}</math> Hitunglah <math>A^3</math>, <math>A^{-3}</math> dan <math>A^2 - 2A + I</math></p>	<pre data-bbox="1010 751 1525 847">&gt; restart; &gt; with(linalg): &gt; A:=matrix(2,2,[2,0,4,1]);</pre> $A := \begin{bmatrix} 2 & 0 \\ 4 & 1 \end{bmatrix}$ <pre data-bbox="1010 1002 1256 1029">&gt; evalm(A^3);</pre> $\begin{bmatrix} 8 & 0 \\ 28 & 1 \end{bmatrix}$ <pre data-bbox="1010 1182 1469 1209">&gt; evalm((inverse(A))^3);</pre>

Soal	Kunci
	$\begin{bmatrix} \frac{1}{8} & 0 \\ \frac{-7}{2} & 1 \end{bmatrix}$ <pre data-bbox="1010 405 2007 432">&gt; evalm(A^2-2*A+LinearAlgebra:-IdentityMatrix(2,2));</pre> $\begin{bmatrix} 1 & 0 \\ 4 & 0 \end{bmatrix}$
<p>11. Selesaikan x pada:</p> $\begin{vmatrix} 1 & x & x^2 \\ 1 & 1 & 1 \\ 1 & -3 & 9 \end{vmatrix} = 0$	<pre data-bbox="1010 628 1776 724">&gt; restart; &gt; with(linalg): &gt; A:=matrix(3,3,[1,x,x^2,1,1,1,1,-3,9]);</pre> $A := \begin{bmatrix} 1 & x & x^2 \\ 1 & 1 & 1 \\ 1 & -3 & 9 \end{bmatrix}$ <pre data-bbox="1010 948 1182 975">&gt; det(A);</pre> $12 - 8x - 4x^2$ <pre data-bbox="1010 1070 1218 1098">&gt; solve(%);</pre> $-3, 1$
<p>12. Diketahui:</p> $\begin{bmatrix} 2 & 5 & 5 \\ -1 & -1 & 0 \\ 2 & 4 & 3 \end{bmatrix}$ <p>Tentukan invers</p>	<pre data-bbox="1010 1227 1758 1323">&gt; restart; &gt; with(linalg): &gt; A:=matrix(3,3,[2,5,5,-1,-1,0,2,4,3]);</pre>

Soal	Kunci
(a) Matriks Adjoin (b) Matriks elementer	$A := \begin{bmatrix} 2 & 5 & 5 \\ -1 & -1 & 0 \\ 2 & 4 & 3 \end{bmatrix}$ <pre>&gt; adj(A);</pre> $\begin{bmatrix} -3 & 5 & 5 \\ 3 & -4 & -5 \\ -2 & 2 & 3 \end{bmatrix}$ <pre>&gt; det(A);</pre> <p style="text-align: center;">— 1</p> <pre>&gt; inv_A:=evalm(1/det(A)*adj(A));</pre> $inv\_A := \begin{bmatrix} 3 & -5 & -5 \\ -3 & 4 & 5 \\ 2 & -2 & -3 \end{bmatrix}$ <pre>&gt; inverse(A);</pre> $\begin{bmatrix} 3 & -5 & -5 \\ -3 & 4 & 5 \\ 2 & -2 & -3 \end{bmatrix}$ <pre>&gt; A:=matrix(3,6,[2,5,5,1,0,0,-1,-1,0,0,1,0,2,4,3,0,0,1]);</pre>

Soal	Kunci
	$A := \begin{bmatrix} 2 & 5 & 5 & 1 & 0 & 0 \\ -1 & -1 & 0 & 0 & 1 & 0 \\ 2 & 4 & 3 & 0 & 0 & 1 \end{bmatrix}$ <p>&gt; <code>gaussjord(A);</code></p> $\begin{bmatrix} 1 & 0 & 0 & 3 & -5 & -5 \\ 0 & 1 & 0 & -3 & 4 & 5 \\ 0 & 0 & 1 & 2 & -2 & -3 \end{bmatrix}$