The viewing parameters for a parallel projection are given as

<b>U</b> 1	1	1 0	_
VRP(WC)=(3,4,5)		VPN(W	C)=(8,6,12)
VUP(WC)=(1,2,3)			(2,5,-5)
$u_{\min}(VRC) = -4$		u <sub>max</sub> (V	(RC) = 6
$v_{\min}(VRC) = 24$		v <sub>max</sub> (V	(RC) = 26
$n_{\min}(VRC) = 10$		n <sub>max</sub> (V	(RC) = 20

Given all other transformations, find the **Shear** matrix which will transform this viewing volume into a unit cube which is bounded by the planes: x=0; x=1; y=0; y=1; z=0; z=1

Иa	trix	<b>#2</b> •	R۷
via	LITX.	#4.	$\mathbf{n}$

1.000	0.000	0.000	0.000
0.000	0.894	-0.447	0.000
0.000	0.447	0.894	0.000
0.000	0.000	0.000	1.000

## Matrix #4: Rz

0.417	0.909	0.000	0.000
-0.909	0.417	0.000	0.000
0.000	0.000	1.000	0.000
0.000	0.000	0.000	1.000

## Matrix #6: Translate

1.000	0.000	0.000	4.000
0.000	1.000	0.000	-24.000
0.000	0.000	1.000	-10.000
0.000	0.000	0.000	1.000

#### Matrix #7: Scale

0.100	0.000	0.000	0.000
0.000	0.500	1.000	0.000
0.000	0.000	0.100	0.000
0.000	0.000	0.000	1.000

### Matrix #1: Translate

1.000	0.000	0.000	-3.000	
0.000	1.000	0.000	-4.000	
0.000	0.000	1.000	-5.000	
0.000	0.000	0.000	1.000	

#### Matrix #3: Ry

0.859	0.000	-0.512	0.000
0.000	1.000	0.000	0.000
0.512	0.000	0.859	0.000
0.000	0.000	0.000	1.000

## Matrix #5: Shear

The viewing parameters for a parallel projection are given as

 $\begin{array}{lll} VRP(WC) = (0,0,0) & VPN(WC) = (0,0,1) \\ VUP(WC) = (0,1,0) & PRP (VRC) = (4,7,10) \\ u_{min} (VRC) = 6 & u_{max} (VRC) = 11 \\ v_{min} (VRC) = -3 & v_{max} (VRC) = 5 \\ n_{min} (VRC) = 12 & n_{max} (VRC) = 20 \\ \end{array}$ 

Given all other transformations, find the **Shear** matrix which will transform this viewing volume into a unit cube which is bounded by the planes: x=0; x=1; y=0; y=1; z=0; z=1 Matrix #2: Rx

0

0

0

into a uni	i cube whi	ch is bound	aed by the
	Matrix #2	2: Rx	
1	0	0	0
0	1	0	0
0	0	1	0
0	0	0	1
	Matrix #4	: Rz	
1	0	0	0
0	1	0	0
0	0	1	0
0	0	0	1
	Matrix #6:	Shear	
	Matrix #8:	Scale	
1/5	0	0	0
0	1/8	0	0
0	0	1/8	0

0

0

0

x=0; x=1;	y=0; y=1	; z=0; z=1	Matrix #2
	Matrix #1:	<b>Franslate</b>	
1	0	0	0
0	1	0	0
0	0	1	0
0	0	0	1
	Matrix #	43: Ry	-1
1	0	0	0
0	1	0	0
0	0	1	0
0	0	0	1
	Matrix #5	: Shear	
	Matrix #7:	translate	.1
1	0	0	-6
0	1	0	3
0	0	1	-12

The viewing parameters for a parallel projection are given as

 $\begin{array}{lll} VRP(WC) = & (3,4,5) \\ VUP(WC) = & (1,2,3) \\ u_{min} & (VRC) = -4 \\ v_{min} & (VRC) = 8 \\ n_{min} & (VRC) = 3 \\ \end{array} \quad \begin{array}{lll} VPN(WC) = & (8,6,12) \\ PRP & (VRC) = & (2,5,5) \\ u_{max} & (VRC) = 6 \\ v_{max} & (VRC) = 12 \\ n_{max} & (VRC) = 5 \end{array}$ 

Given all other transformations, find the **Scale** matrix which will transform this viewing volume into a unit cube which is bounded by the planes: x=0; x=1; y=0; y=1; z=0; z=1

vol	lume into	a unit cub	e which is
	Matrix #2	2: Rx	
1.000	0.000	0.000	0.000
0.000	0.894	-0.447	0.000
0.000	0.447	0.894	0.000
0.000	0.000	0.000	1.000
	Matrix #4	: Rz	
0.417	0.909	0.000	0.000
-0.909	0.417	0.000	0.000
0.000	0.000	1.000	0.000
0.000	0.000	0.000	1.000
	Matrix #6:	Shear	
1.000	0.000	0.000	0.000
0.000	1.000	1.000	0.000
0.000	0.000	1.000	0.000
0.000	0.000	0.000	1.000
	Matrix #8:	Scale	

d by the planes: $x=0$ ; $x=1$ ; $y=0$ ; $y=1$ ; $z=0$								
4 000			0.000					
			-3.000					
0.000	1.000	0.000	-4.000					
0.000	0.000	1.000	-5.000					
0.000	0.000	0.000	1.000					
Matrix #3: Ry								
0.859	0.000	-0.512	0.000					
0.000	1.000	0.000	0.000					
0.512	0.000	0.859	0.000					
0.000	0.000	0.000	1.000					
Matrix #5: Shear								
1.000	0.000	-0.200	0.000					
0.000	1.000	0.000	0.000					
0.000	0.000	1.000	0.000					
0.000	0.000	0.000	1.000					
Matrix #7: Translate								
1.000	0.000	0.000	4.000					
0.000	1.000	0.000	-8.000					
0.000	0.000	1.000	-3.000					
0.000	0.000	0.000	1.000					
	1.000 0.000 0.000 0.000 0.859 0.000 0.512 0.000 0.000 0.000 0.000 0.000	Matrix #1   1.000   0.000	Matrix #1: Translate					

The viewing parameters for a parallel projection are given as

 $\begin{array}{lll} VRP(WC) = & (3,4,5) \\ VUP(WC) = & (1,2,3) \\ u_{min} & (VRC) = 2 \\ v_{min} & (VRC) = 16 \\ n_{min} & (VRC) = 15 \\ \end{array} \quad \begin{array}{lll} VPN(WC) = & (8,6,12) \\ PRP & (VRC) = & (5,2,1) \\ u_{max} & (VRC) = 6 \\ v_{max} & (VRC) = 24 \\ n_{max} & (VRC) = 20 \\ \end{array}$ 

Given all other transformations, find the **Shear** matrix and **Scale** matrix which will transform this viewing volume into a volume which is bounded by the planes: x=-1; y=-1; y

#### Matrix #2: Rx 0.000 0.000 0.000 1.000 0.000 0.894 -0.447 0.000 0.000 0.447 0.894 0.000 0.000 0.000 0.000 1.000

#### Matrix #4: Rz 0.417 0.909 0.000 0.000 -0.909 0.417 0.000 0.000 0.000 0.000 1.000 0.000 0.000 0.000 0.000 1.000

Matrix #6: Translate							
1.000	0.000	0.000	-4.000				
0.000	1.000	0.000	-20.000				
0.000	0.000	1.000	-15.000				
0.000	0.000	0.000	1.000				

Matrix #7: Scale					

Matrix #1: Translate						
1.000	0.000	0.000	-3.000			
0.000	1.000	0.000	-4.000			
0.000	0.000	1.000	-5.000			
0.000	0.000	0.000	1.000			
Motriv #3. Dv						

	Matrix #3: Ry							
	0.859	0.000	-0.512	0.000				
	0.000	1.000	0.000	0.000				
	0.512	0.000	0.859	0.000				
	0.000	0.000	0.000	1.000				
•	Matrix #5: Shear							

1	TD1	•	•		0	11 1	•	. •		•	
	Tho	TILOTT	71110	naramatara	tora	norallal	11101C	otion	Ora	011701	OC
1.	1110	VICN	V 1112	parameters	ioi a	Daranci	DIOIC	CHOIL	arc '	211011	as
				I		r	F J -		,	<i></i>	

VRP(WC)=(1,3,4)	VPN(WC)=(6,0,8)
VUP(WC)=(10,0,0)	PRP (VRC) = (0,4,5)
$u_{\min}$ (VRC) = 13	$u_{max}(VRC) = 17$
$v_{\min}(VRC) = -7$	$v_{max}(VRC) = 3$
$n_{\min}(VRC) = 12$	$n_{max}(VRC) = 14$

Find the sequence of transformations which will transform this viewing volume into a standard parallel view volume which is bounded by the planes: x=1; x=-1; y=1; y=-1; z=0; z=1

, z-1 Matrix	#2		_		Matri	x #1	
			<u> </u> 				
Matrix	Matrix #4 Matrix #3						
			<del> </del>				
			<u> </u> 				
Matrix #6							
Matrix	#6		-		Matrix	x #5	
Matrix	#6				Matrix	x #5	
Matrix	#6				Matrix	x #5	
Matrix	#6				Matrix	x #5	
Matrix	#6				Matrix	x #5	
Matrix	#6				Matrix	x #5	
Matrix					Matrix		

The viewing parameters for a parallel projection are given as:

$$\begin{array}{lll} \text{VRP(WC)=(0,0,0)} & \text{VPN(WC)=(0,0,1)} \\ \text{VUP(WC)=(0,1,0)} & \text{PRP (VRC)=(10,20,50)} \\ \\ u_{\min} \text{(VRC)} = -6 & \\ u_{\max} \text{(VRC)} = -2 \\ \\ v_{\min} \text{(VRC)} = -2 & \\ v_{\max} \text{(VRC)} = 6 \\ \\ n_{\min} \text{(VRC)} = -4 & \\ n_{\max} \text{(VRC)} = 1 \\ \end{array}$$

Find the sequence of transformations which will transform this viewing volume into a unit cube which is bounded by the planes: x=0; x=1; y=0; y=1; z=0; z=1

Matrix #2: 0 1 0	0 0	0	ī [		Matrix #1: 7	Franslate	
1		0				1 ungiute	
1	0			1	0	0	0
0	U	0		0	1	0	0
U	1	0		0	0	1	0
0	0	1		0	0	0	1
Matrix #4:	: Rz				Matrix #	3: Ry	
0	0	0		1	0	0	0
1	0	0		0	1	0	0
0	1	0		0	0	1	0
0	0	1		0	0	0	1
trix #6: Tr	anslate				Matrix #5	: Shear	
			I		Matrix #7	: Scale	
			<u> </u>				
	Matrix #4 0 1 0	Matrix #4: Rz  0 0  1 0  0 1	Matrix #4: Rz  0 0 0  1 0 0  0 0  0 1 0  0 1 0	Matrix #4: Rz  0 0 0  1 0 0  0 0  0 1 0  0 1 0	Matrix #4: Rz  0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	Matrix #4: Rz         Matrix #           0         0         0           1         0         0           0         1         0           0         0         0	Matrix #4: Rz         Matrix #3: Ry           0         0           1         0           0         1           0         0           1         0           0         1           0         0           0         0           0         0           0         0           0         0           0         0

The viewing parameters for a parallel projection are given as

 $\begin{array}{lll} VRP(WC) = (0,0,0) & VPN(WC) = (0,0,1) \\ VUP(WC) = (0,1,0) & PRP (VRC) = (4,5,10) \\ u_{min} (VRC) = 1 & u_{max} (VRC) = 5 \\ v_{min} (VRC) = -6 & v_{max} (VRC) = 2 \\ n_{min} (VRC) = 30 & n_{max} (VRC) = 40 \\ \end{array}$ 

a. Find the sequence of transformations which will transform this viewing volume into a standard parallel view volume (unit cube) which is bounded by the planes: x=0; x=1; y=0; y=1; z=0; z=1

Matrix #2: Rx

1	0	0	0			
0	1	0	0			
0	0	1	0			
0	0	0	1			

Matrix #4: Rz

1	0	0	0
0	1	0	0
0	0	1	0
0	0	0	1

Matrix #6

THE TANK				

Matrix #1: Translate

1	0	0	0
0	1	0	0
0	0	1	0
0	0	0	1

#### Matrix #3: Ry

1	0	0	0
0	1	0	0
0	0	1	0
0	0	0	1

#### Matrix #5:

1.14411111101			

Matrix #7

112662 112 117			

The viewing parameters for a parallel projection are given as VRP(WC)=(0,0,0)VPN(WC)=(0, 2, 0)VUP(WC)=(0,1,2)PRP (VRC)=(12,25,60)  $u_{\text{max}}(VRC) = -17$  $u_{\min}(VRC) = -13$  $v_{\text{max}}$  (VRC) = 9  $v_{\min}(VRC) = -7$  $n_{max}$  (VRC) = 62  $n_{\min}$  (VRC) = 58 Find the sequence of transformations which will transform this viewing volume into a standard parallel view volume which is bounded by the planes: x=1; y=1; y=-1; z=0; z=1**Show the matrices for Problem 2** Matrix #2 Matrix #1 Matrix #4 Matrix #3 Matrix #5 Matrix #6 Matrix #7 Matrix #8