

"Advanced Strength and Stress Analysis," 2nd ed., Budynas, Problem 1.16: Determine the stress matrix if the modulus of elasticity is 30 Msi, Poissons ratio is 0.3, and the strain matrix is [5, -2, 3; -2, -3, 1; 3, 1, 2] x10-4.

E= 3.00E+07      nu= 0.3

Strain							Stress										
e <sub>x</sub>	"	"="	3.33E-08	-1.00E-08	-1.00E-08	0	0	0	x	S <sub>x</sub>							
e <sub>y</sub>			-1.00E-08	3.33E-08	-1.00E-08	0	0	0			S <sub>y</sub>						
e <sub>z</sub>			-1.00E-08	-1.00E-08	3.33E-08	0	0	0				S <sub>z</sub>					
e <sub>zy</sub>			0	0	0	8.67E-08	0	0					S <sub>zy</sub>				
e <sub>zx</sub>			0	0	0	0	8.67E-08	0						S <sub>zx</sub>			
e <sub>xy</sub>			0	0	0	0	0	8.67E-08							S <sub>xy</sub>		
Stress							Strain										
S <sub>x</sub>	1.8462E+04	"	"="	40384615	17307692	17307692	0	0	0	x	5.00E-04					e <sub>x</sub>	
S <sub>y</sub>	2.7285E-12			17307692	40384615	17307692	0	0	0			-3.00E-04				e <sub>y</sub>	
S <sub>z</sub>	1.1538E+04			17307692	17307692	40384615	0	0	0				2.00E-04			e <sub>z</sub>	
S <sub>zy</sub>	1.1538E+03			0	0	0	11538462	0	0					1.00E-04		e <sub>zy</sub>	
S <sub>zx</sub>	3.4615E+03			0	0	0	0	11538462	0						3.00E-04	e <sub>zx</sub>	
S <sub>xy</sub>	-2.3077E+03			0	0	0	0	0	11538462							-2.00E-04	e <sub>xy</sub>