

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	
1															
2			MATLAB Project (#2) - Metallic Failure Analysis												
3			SE-160A Aerospace Structural Analysis, University of California, San Diego (Copyright J.B. Kosmatka, 2020)												
4															
5			Version:	Winter, 2020 (v1)											
6															
7			Project Title:	Reader Example, Volume 1, page 239 (4.48), 2-D Stress Failure Analysis, 7075-T6 Al											
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31			X	Option 1: Applied Stress State											
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43			X	Option 2: Measured Strain State From Rosettes											
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59			0	END OF FILE											

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1														
2			MATLAB Project (#2) - Metallic Failure Stress Analysis											
3			SE-160A Aerospace Structural Analysis, University of California, San Diego (Copyright J.B. Kosmatka, 2020)											
4														
5			Version:	Winter, 2020 (v2) - Input: US, Output: US/SI										
6														
7			Student Name:	John Kosmatka										
8			Student ID:	A0123456789										
9														
10			Project Title:	Reader Example, Volume 1, page 239 (4.48), 2-D Stress Failure Analysis, 7075-T6 Al										
11														
12			INPUT ECHO:											
13														
14			Variable	Description	Value	Units					Units Reference			
15			iInput	Input Units	1	1 = US, 2 = SI					US	SI		
16			iOutput	Output Units	1	1 = US, 2 = SI			σ, τ	10^3 lb/in^2	MPa			
17			loption	Analysis Option	1	1 = Stress, 2 = Strain			E, G	10^6 lb/in^2	GPa			
18														
19			Material Properties											
20			Variable	Description	A-Basis	B-Basis	Units							
21			E	Young's Modulus	10.3000	10.3000	Msi							
22			G	Shear Modulus	3.9000	3.9000	Msi							
23			σ_{yT}	yield strength - tension	68.0000	70.0000	Ksi							
24			σ_{uT}	ultimate strength - tension	78.0000	80.0000	Ksi							
25			σ_{yC}	yield strength - compression	-70.0000	-73.0000	Ksi							
26			σ_{uC}	ultimate strength - compression	-78.0000	-80.0000	Ksi							
27			τ_y	yield strength - shear	35.2500	35.2500	Ksi							
28			τ_u	ultimate strength - shear	46.0000	48.0000	Ksi							
29														
30			Safety Factors											
31			Variable	Description	Value	Units								
32			SF _y	Safety Factor - yield	1.1	1								
33			SF _u	Safety Factor - ultimate	1.5	1								
34														
35			Applied Stress State											
36			Variable	Description	Value	Units								
37			σ_{xx}	Normal Stress - x	45.0000	Ksi								
38			σ_{yy}	Normal Stress - y	15.0000	Ksi								
39			σ_{zz}	Normal Stress - z	0.0000	Ksi								
40			τ_{yz}	Shear Stress - yz	0.0000	Ksi								
41			τ_{xz}	Shear Stress - xz	0.0000	Ksi								
42			τ_{xy}	Shear Stress - xy	20.0000	Ksi								
43														
44														
45			OUTPUT:											
46														
47			1.) Principal Stress State											
48														
49			Variable	Description	1	2	3	Units						
50			σ_p	Principal Stresses	0.0000	5.0000	55.0000	Ksi						
51					0.0000	0.4472	-0.8944	1						
52			{ Φ }	Eigenvector {Q}	0.0000	-0.8944	-0.4472	1						
53					1.0000	0.0000	0.0000	1						
54														
55			Variable	Description	Value	Units								
56			τ_{max}	Maximum Shear Stress	27.5000	Ksi								
57														
58														
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