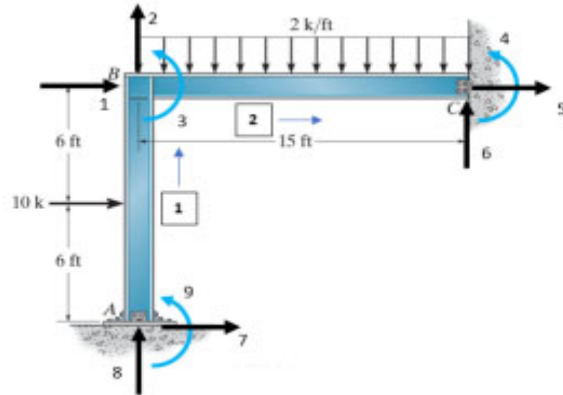


Quiz #10 F24



FEM_{BC}

450.00 k in
-15.00 k

FEM_{AB}

180.00 k in
5.00 k

Element 1

L = 144 in
I = 600 in⁴
A = 10 in²

E = 29,000 ksi
 $\theta_x = 90^\circ$
 $\theta_y = 0^\circ$

$\lambda_x = 0.000$
 $\lambda_y = 1.000$

AE/L = 2,013.9 k/in
12EI/L³ = 69.9 k/in
6EI/L² = 5,034.7 k
4EI/L = 483,333.3 k in
2EI/L = 241,666.7 k in

7	8	9	1	2	3	
69.93	0.00	-5,034.72	-69.93	0.00	-5,034.72	7
0.00	2,013.89	0.00	0.00	-2,013.89	0.00	8
-5,034.72	0.00	483,333.33	5,034.72	0.00	241,666.67	9
-69.93	0.00	5,034.72	69.93	0.00	5,034.72	1
0.00	-2,013.89	0.00	0.00	2,013.89	0.00	2
-5,034.72	0.00	241,666.67	5,034.72	0.00	483,333.33	3

Element 2

L = 180 in
I = 800 in⁴
A = 8 in²

E = 29,000 ksi
 $\theta_x = 0^\circ$
 $\theta_y = 90^\circ$

$\lambda_x = 1.000$
 $\lambda_y = 0.000$

AE/L = 1,288.9 k/in
12EI/L³ = 47.7 k/in
6EI/L² = 4,296.3 k
4EI/L = 515,555.6 k in
2EI/L = 257,777.8 k in

1	2	3	5	6	4	
1,288.89	0.00	0.00	-1,288.89	0.00	0.00	1
0.00	47.74	4,296.30	0.00	-47.74	4,296.30	2
0.00	4,296.30	515,555.56	0.00	-4,296.30	257,777.78	3
-1,288.89	0.00	0.00	1,288.89	0.00	0.00	5
0.00	-47.74	-4,296.30	0.00	47.74	-4,296.30	6
0.00	4,296.30	257,777.78	0.00	-4,296.30	515,555.56	4

	1	2	3	4	5	6	7	8	9	
k1	69.93	0.00	5034.72				-69.93	0.00	5034.72	1
	0.00	2013.89	0.00				0.00	-2013.89	0.00	2
	5034.72	0.00	483333.33				-5034.72	0.00	241666.67	3
										4
										5
										6
	-69.93	0.00	-5034.72				69.93	0.00	-5034.72	7
	0.00	-2013.89	0.00				0.00	2013.89	0.00	8
	5034.72	0.00	241666.67				-5034.72	0.00	483333.33	9

	1	2	3	4	5	6	7	8	9	
k2	1288.89	0.00	0.00	0.00	-1288.89	0.00				1
	0.00	47.74	4296.30	4296.30	0.00	-47.74				2
	0.00	4296.30	515555.56	257777.78	0.00	-4296.30				3
	0.00	4296.30	257777.78	515555.56	0.00	-4296.30				4
	-1288.89	0.00	0.00	0.00	1288.89	0.00				5
	0.00	-47.74	-4296.30	-4296.30	0.00	47.74				6
										7
										8
										9

	1	2	3	4	5	6	7	8	9	
K	1,358.82	0.00	5,034.72	0.00	-1,288.89	0.00	-69.93	0.00	5,034.72	1
	0.00	2,061.63	4,296.30	4,296.30	0.00	-47.74	0.00	-2,013.89	0.00	2
	5,034.72	4,296.30	998,888.89	257,777.78	0.00	-4,296.30	-5,034.72	0.00	241,666.67	3
	0.00	4,296.30	257,777.78	515,555.56	0.00	-4,296.30	0.00	0.00	0.00	4
	-1,288.89	0.00	0.00	0.00	1,288.89	0.00	0.00	0.00	0.00	5
	0.00	-47.74	-4,296.30	-4,296.30	0.00	47.74	0.00	0.00	0.00	6
	-69.93	0.00	-5,034.72	0.00	0.00	0.00	69.93	0.00	-5,034.72	7
	0.00	-2,013.89	0.00	0.00	0.00	0.00	0.00	2,013.89	0.00	8
	5,034.72	0.00	241,666.67	0.00	0.00	0.00	-5,034.72	0.00	483,333.33	9

1	2	3
1,358.82	0.00	5,034.72
0.00	2,061.63	4,296.30
5,034.72	4,296.30	998,888.89

Q
5
-15
-270

D = K ⁻¹ Q	
0.00466	in
-0.00672	in
-0.00026	rads

K

1	2	3	4	5	6	7	8	9	
1,358.82	0.00	5,034.72	0.00	-1,288.89	0.00	-69.93	0.00	5,034.72	1
0.00	2,061.63	4,296.30	4,296.30	0.00	-47.74	0.00	-2,013.89	0.00	2
5,034.72	4,296.30	998,888.89	257,777.78	0.00	-4,296.30	-5,034.72	0.00	241,666.67	3
0.00	4,296.30	257,777.78	515,555.56	0.00	-4,296.30	0.00	0.00	0.00	4
-1,288.89	0.00	0.00	0.00	1,288.89	0.00	0.00	0.00	0.00	5
0.00	-47.74	-4,296.30	-4,296.30	0.00	47.74	0.00	0.00	0.00	6
-69.93	0.00	-5,034.72	0.00	0.00	0.00	69.93	0.00	-5,034.72	7
0.00	-2,013.89	0.00	0.00	0.00	0.00	0.00	2,013.89	0.00	8
5,034.72	0.00	241,666.67	0.00	0.00	0.00	-5,034.72	0.00	483,333.33	9

D		KD		Q ₀		Q	
0.00466	1	5.000		5	1	0.00	k
-0.00672	2	-15.000		-15	2	0.00	k
-0.00026	3	-270.000		-270	3	0.00	k-in
0	4	-97.166		450	4	-547.17	k-in
0	5	-6.008	-	0	5	-6.01	k
0	6	1.459		-15	6	16.46	k
0	7	1.008		5	7	-3.99	k
0	8	13.541		0	8	13.54	k
0	9	-40.544		-180	9	139.46	k-in