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 BRAKES  
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version 2b  
 by Doug Wright

problem 3

drum diameter	250.0 mm	centre-to-hinge distance	100.0 mm
lining limits	0.0 120.0 deg	brake actuating force	1.200 kN
lining width	28.00 mm	coefficient of friction	0.320
		1 trails 2 leads	
ratio of shoe-to-brake actuating forces	1.00	1.00	
actuating force's moment arm about hinge	173.2	173.2	mm
actuating force's inclination	60.0	60.0	deg
inclination of 2's axis relative to 1		-60.0	deg
mean pressure on shoe lining	243.9	542.7	kPa
shoe's contribution to, and total torque	71.5	159.1	230.6 Nm
sensitivity of shoes and of brake	0.725	1.612	1.337
shoe hinge and drum bearing reactions	0.462	2.716	2.323 kN

problem 4

drum diameter	400.0 mm	centre-to-hinge distance	150.0 mm
lining limits	10.0 75.0 deg	brake actuating force	8.604 kN
lining width	75.00 mm	coefficient of friction	0.240
		1 leads 2 trails	
ratio of shoe-to-brake actuating forces	1.00	1.00	
actuating force's moment arm about hinge	165.0	165.0	mm
actuating force's inclination	0.0	0.0	deg
inclination of 2's axis relative to 1		0.0	deg
mean pressure on shoe lining	1000.0	619.5	kPa
shoe's contribution to, and total torque	816.8	506.1	1322.9 Nm
sensitivity of shoes and of brake	1.307	0.810	1.117
shoe hinge and drum bearing reactions	14.942	6.094	18.276 kN

problem 5

drum diameter	20.0 in	centre-to-hinge distance	12.4 in
lining limits	6.0 136.0 deg	brake actuating force	0.400 kip
lining width	1.67 in	coefficient of friction	0.300
		1 trails 2 leads	
ratio of shoe-to-brake actuating forces	4.00	4.12	
actuating force's moment arm about hinge	28.0	22.8	in
actuating force's inclination	76.0	90.0	deg
inclination of 2's axis relative to 1		-28.0	deg
mean pressure on shoe lining	150.0	77.2	psi
shoe's contribution to, and total torque	1417.1	729.3	2146.4 lbf.ft
sensitivity of shoes and of brake	1.315	0.807	1.142
shoe hinge and drum bearing reactions	6.542	4.131	2.509 kip

problem 6

drum diameter	20.0 in	centre-to-hinge distance	12.4 in
lining limits	6.0 136.0 deg	brake actuating force	0.405 kip
lining width	1.70 in	coefficient of friction	0.300
		1 leads 2 trails	
ratio of shoe-to-brake actuating forces	4.00	4.12	
actuating force's moment arm about hinge	28.0	22.8	in
actuating force's inclination	76.0	90.0	deg
inclination of 2's axis relative to 1		-28.0	deg
mean pressure on shoe lining	91.3	124.8	psi
shoe's contribution to, and total torque	880.2	1203.1	2083.3 lbf.ft
sensitivity of shoes and of brake	0.807	1.315	1.100
shoe hinge and drum bearing reactions	4.718	5.925	1.290 kip