

Announcements

- CBTF Quiz 7 next week
- 3D rigid body problems: PL HW10

□ Upcoming deadlines:

- Friday (12/1)
 - WA #4
- Saturday (12/2)
 - ME HW25



Chapter 5 Part II – 3-D Rigid Body

Equilibrium of a rigid body



Now we add the z -axis to the coordinate system!

What are the possible movements for a 3-D body?

TABLE 5-2 Supports for Rigid Bodies Subjected to Three-Dimensional Force Systems










Types of Connection	Reaction	Number of Unknowns
<p>(1)</p>  <p>cable</p>		
<p>(2)</p>  <p>smooth surface support</p>		
<p>(3)</p>  <p>roller</p>		

TABLE 5-2 Supports for Rigid Bodies Subjected to Three-Dimensional Force Systems


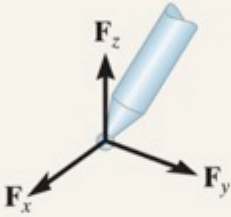


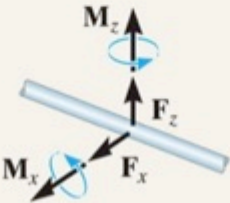

Types of Connection	Reaction	Number of Unknowns
<p>(4)</p>  <p>ball and socket</p>		
<p>(5)</p>  <p>single journal bearing</p>		

TABLE 5-2 Continued


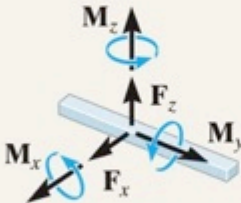


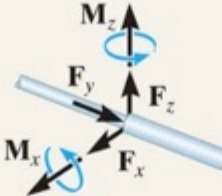


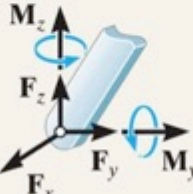


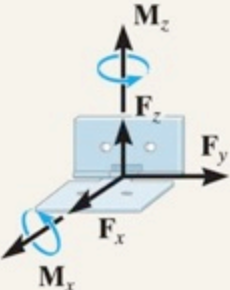


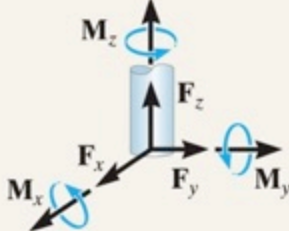
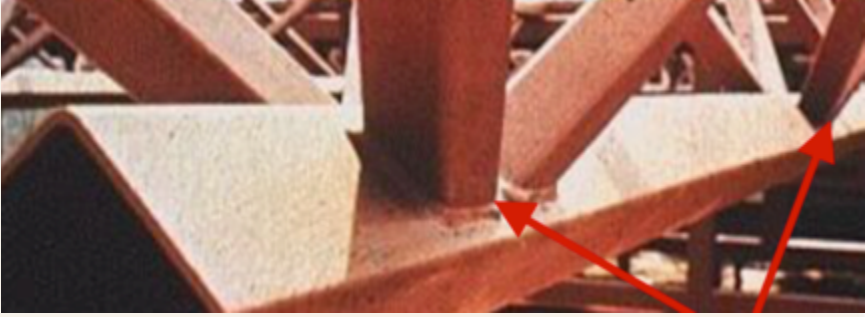
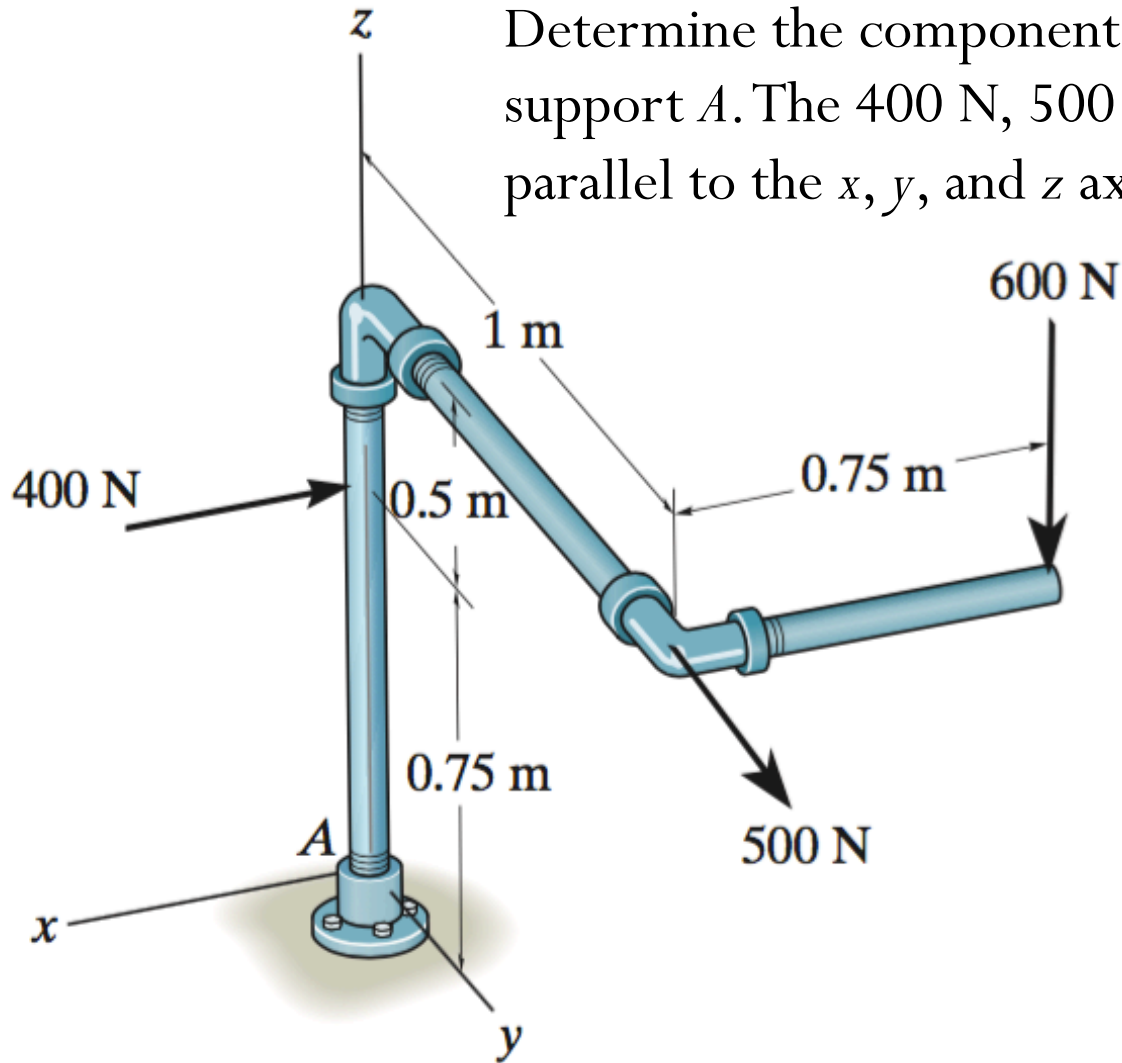
Types of Connection	Reaction	Number of Unknowns
<p>(6)</p>  <p>single journal bearing with square shaft</p>		
<p>(7)</p>  <p>single thrust bearing</p>		
<p>(8)</p>  <p>single smooth pin</p>		

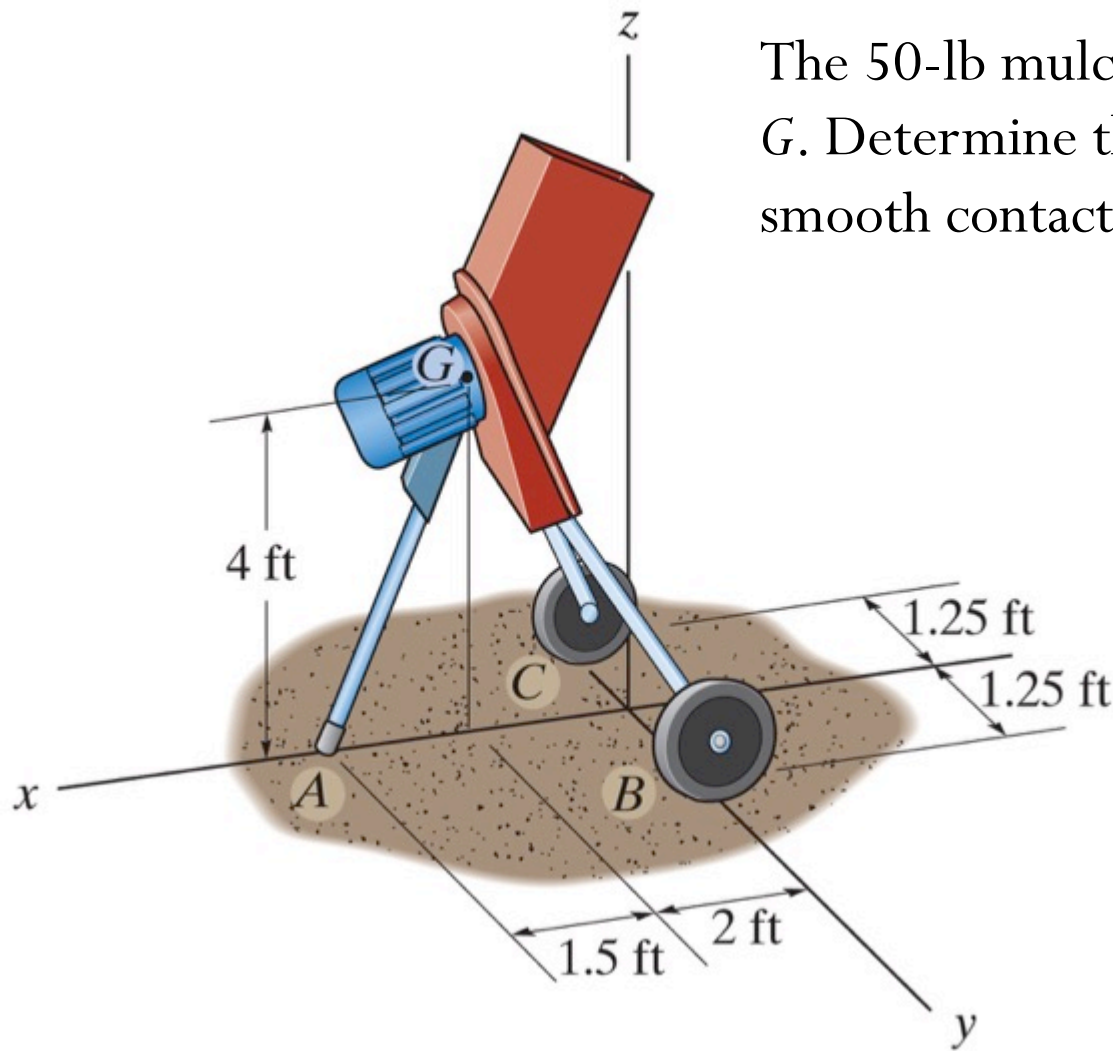
TABLE 5-2 Continued

Types of Connection	Reaction	Number of Unknowns
<p>(9)</p>  <p>single hinge</p>		
<p>(10)</p>  <p>fixed support</p>		

Determine the components of reaction at the fixed support A . The 400 N, 500 N, and 600 N forces are parallel to the x , y , and z axes, respectively.



The 50-lb mulching has a center of gravity at G . Determine the vertical reactions at the smooth contact point A .



A bent rod is supported by smooth journal bearings at A , B , and C . $F = 800$ N. The supports are properly aligned such that no moment support is present. Determine the reactions at support C .

