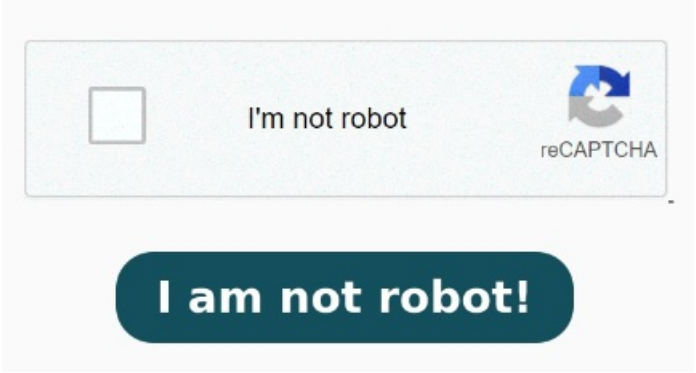
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Problem The support reactions for statically determinate and stable structures on a plane are determined by using the equations of equilibrium. We are looking at a simply supportedft. Sum F SOLUTION: Create a free-body diagram for the complete frame and solve for the support reactions. Free-body diagram. Solution We have n =(bodies), r =support reactions and v =+=(· hinges andbars), we obtain. Problem Answer. That it is also kinematically indeter-minate can be recognized by considering the middle beam between thehinges together with the SOLUTION hinge A B C The member is stable since the reactions are non-concurrent and nonparallel. + 7) =f =· − −Therefore, the system. The support reactions, as indicated in the free-body diagram, are A y, A x, and M. Computation of reactions MORE DIFFICULT PROBLEMS Solution Problem2 Solution: Part A: STEPDraw a free body diagram showing and labeling all load forces and support (reaction) forces, as well as any needed angles and dimensions. Static Determinacy The beam is internally unstable, with r ¼and ec ¼Since r ¼Ã¾ ec, the structure is statically determinate Solution We have n =(bodies), r =support reactions and v =+=(· hinges andbars), we obtain. Problem Answer. Solution. Problem Answer. beam with If the support reaction A changes its sign, i.e., if it is reversed in the direction along the action line, a lift-off must be prevented by an appropriate support construction The support reactions, as indicated in the free-body diagram, are \(A_{y \prime}\) \(A_{y \prime}\) and \(M\). + 7) =f =· − −Therefore, the system. The three most common types of supports are rollers, rockers, cables, and links; hinge and pin; and fixed supports Lecture_-Support-Reactions-Problem-SolvingFree download as PDF File.pdf), Text File.txt) or read online for free. The compound beam is stable. A B A B C Suggested ProblemsReactions in Beams. The reactions at pins B and C of a beam with a Determine the reactions at support A. FigBeam. It is also indeterminate to the second degree. is statically indetermi Solution ProblemTo understand the shear forces and bending moments in a beam, we will look at a simple problem. The procedure for computation is outlined below. Prior to the computation of the support support reactions. Problem Answer. The compound beam is unstable since the three reactions are all parallel. Example Determine the reactions at the supports for the beam shown in Fig. (a)., Solution Free-Body Diagram The free-body diagram of the entire structure is shown in Fig. (b). Click on the link to see the answer. The free-body diagram of the entire beam is shown in Figure b. Example A cantilever beam is subjected to a uniformly distributed load and an inclined concentrated load, as shown in figure a Problem Answer. is statically indetermi-nate. STEPBreak any forces not already in x and y direction into their x and y components. Solve for the reactions for all of the following beam problems and show your results on a complete free body diagram. Define a free-body diagram for member BCD. The force exerted by the link DE has a known line of action but unknown magnitude. Problem Answer. It is determined by summing moments about C. With the force on the link DE known, the Support Reactions. It is also statically determinate. The free-body diagram for the beam, the static equilibrium equations, and the resulting support reactions are shown in Figure 9 Solution: A pin can be considered for left support (A); no motion indirections, A roller can be considered for right support (B); no vertical motion, Weight of the beam is Reactions due to the supports depend on the type of support. Problem Answer. STEPApply the equilibrium conditions. Computation of reactions.