

# CVE154 Exam 2, Part 3

prepared by Christian Cahig for classes of A.Y. 2024-2025 S1

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Referring to Figure 1, the rigid tripod assembly is subject to a force  $\mathbf{F} = 24\mathbf{i} + 71\mathbf{j} - 96\mathbf{k}$  lb, supported by a ball-and-socket joint at  $B$  and by rollers at  $A$  and  $C$ .

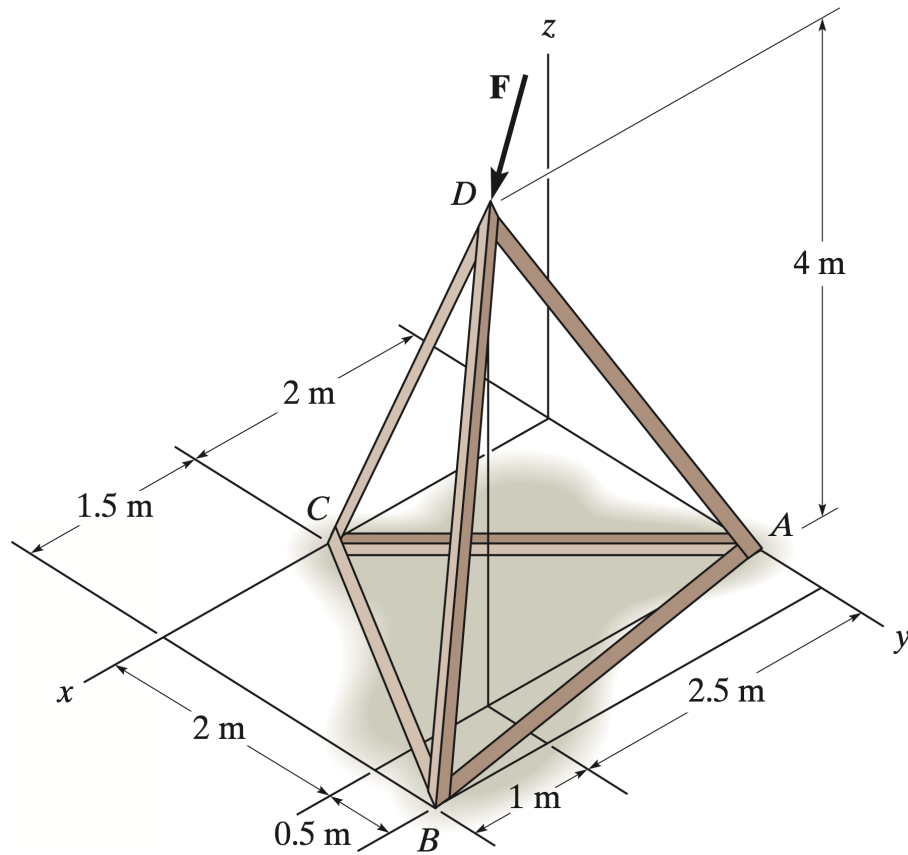


Figure 1 The tripod assembly is supported by a ball-and-socket joint and rollers.

**P1 (15 pt.)** Derive a system of linear equations  $\mathbf{A}\mathbf{x} = \mathbf{b}$  where  $\mathbf{x}$  collects the unknown  $z$ -components of the reaction forces. Comment on the solvability of the linear system by making observations on  $\mathbf{A}$ .

**P2 (10 pt.)** Solve for  $\mathbf{x}$  via Gaussian elimination. You may use any pivoting strategy.

**P3 (15 pt.)** Solve for  $\mathbf{x}$  via LU decomposition. You may use any pivoting strategy.