

CVE154 Exam 2, Part 3

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Referring to Figure 1, the rigid tripod assembly is subject to a force $\mathbf{F} = 4.2\mathbf{i} + 1.7\mathbf{j} - 6.9\mathbf{k}$ N, supported by a ball-and-socket joint at A and by rollers at B and C .

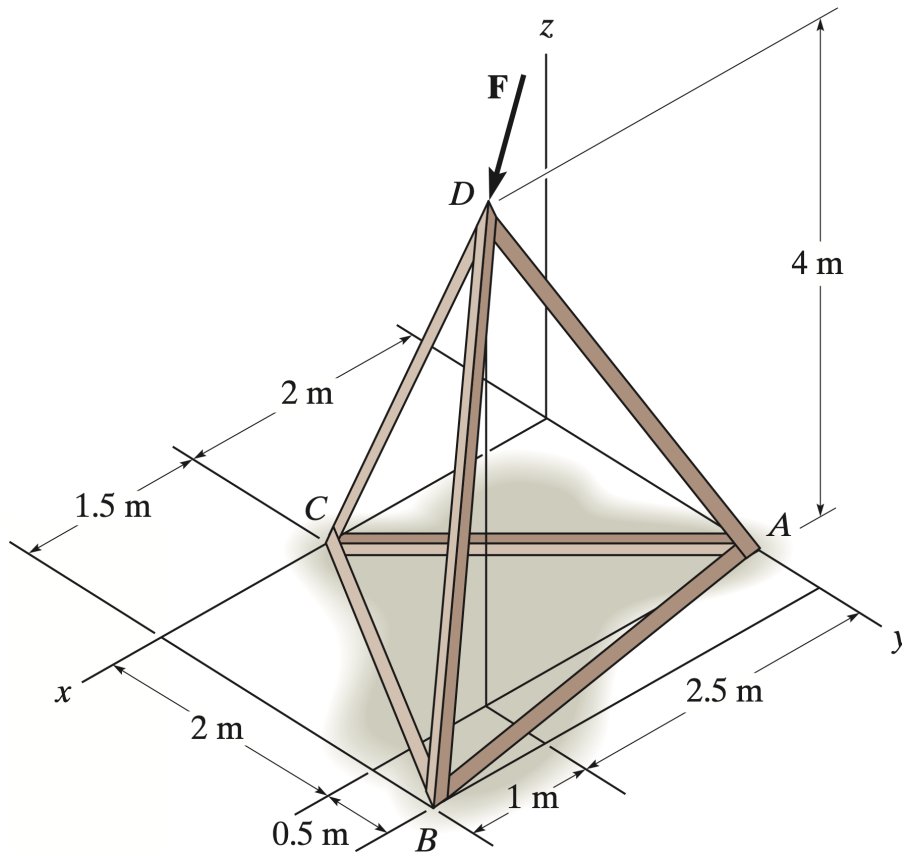


Figure 1 The tripod assembly is supported by a ball-and-socket joint and rollers.

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.