

**Homework 3.****Due: 3:35pm, Monday October 3, 2005.**

Please use a word processor for preparing your answers to Problems 5. For Problems 1, 3 and 4 please use free sheets of paper (i.e. NOT paper torn from your notebook) and present your answers neatly, clearly and understandably. Follow the guidelines given on 9/12/05. Again, I would prefer you to get into the habit of using engineering paper, but that is not a requirement. For Problem 2 you will turn in a printout of your spreadsheet. You should include comments to explain clearly and concisely what you have done.

**QUESTION 1.**

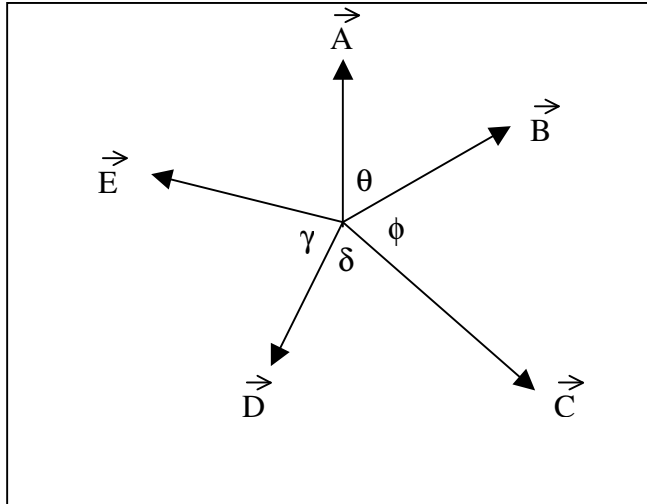
Find the x and y components of the force F. The angle  $\theta$  is measured positive counter clockwise from the positive x-axis. Include a sketch of the force and its components.

	F	$\theta$
a)	350 lb	$50^\circ$
b)	1200 N	$135^\circ$
c)	68 lb	$225^\circ$
d)	85 kN	$310^\circ$

**QUESTION 2.**

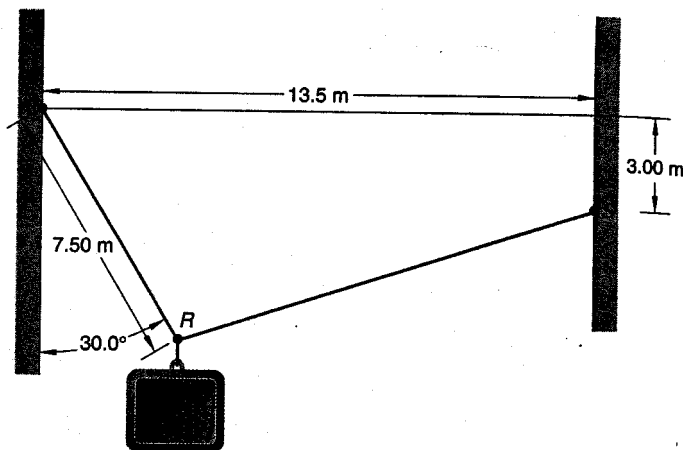
Construct a spreadsheet to determine the resultant of the system of concurrent, coplanar forces shown in the following figure. Express as a Cartesian vector, and in terms of the magnitude and direction of the resultant.

	A	B	C	D	E	$\theta$	$\phi$	$\delta$	$\gamma$
Example from Class	55 lb	45 lb	72 lb	32 lb	38 lb	60	60	60	60
a)	1.5 kN	1.3 kN	2.2 kN	1.1 kN	1.3 kN	45	70	90	50
b)	8.0 lb	7.0 lb	12.0 lb	5.0 lb	6.0 lb	30	90	60	45



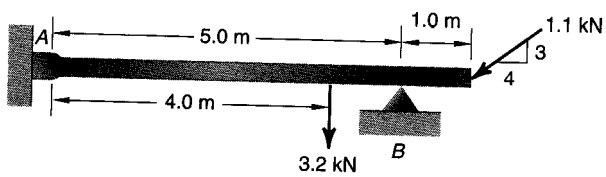
### QUESTION 3.

Construct a free body diagram for the joint R. RP and RS are cables.



### QUESTION 4.

Construct a free-body diagram for the beam shown below. Neglect the mass of the beam.



### QUESTION 5.

In general structures meet the needs of the users and rarely fail catastrophically. However, there are some spectacular structural failures over the last hundred years when structures have been subject to unintended loads due to impacts, natural hazards, or design or construction errors. Examples include the Tacoma Narrows Bridge, the Mianus River Bridge, the Schoharie Creek Bridge, the Kansas City Hyatt, and the World Trade Center.

Identify a structural failure of interest to you and provide a **one page** description and assessment of the failure. Be sure to reference your sources.

### GRADING SHEET – HOMEWORK 3.

CIEG 125 - Introduction to Civil Engineering.

NAME: \_\_\_\_\_

**This sheet MUST be stapled to the front of your homework.**

		Points awarded	Max points
General Presentation (5 points total)	Name, Date, Assignment #		2
	Neatness (don't forget to staple the sheets together in the correct order!)		1
	Logical Presentation		1
	Spelling/Grammar		1
Question 1. (20 points total)	(5 Points each part) Fx (1 point) Fy (1 point) Significant digits? (1 point) Sketch (2 points)		a) 5 b) 5 c) 5 d) 5
Question 2. (25 points total)	Spread Sheet Layout		3
	Significant digits? (1 point) a) 2 points per force b) 2 points per force		2 10 10
Question 3. (10 points total)	Sketch		5
	Forces		2
	Labels		3
Question 4. (10 points total)	Sketch		5
	Forces		2
	Labels		3
Question 5. (30 points)	Sources		5
	Description (location, date, nature of the structure, conditions under which failure occurred) Assessment (Why did failure occur? Could failure have been prevented?)		15 10
TOTAL			100