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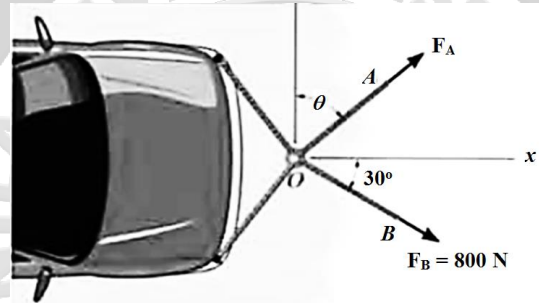
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CHEMICAL ENGINEERING REGULAR REVIEW

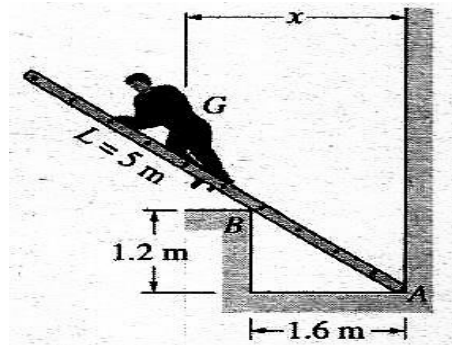
ENGINEERING MECHANICS

SIT A: The resultant force on the ring at O in the figure above is 1,250 N and is directed along the positive x-axis.



- Determine the magnitude of F_A in N.
 - 492.37
 - 685.89
 - 633.02
 - 516.02
- Determine the direction, θ , of F_A .
 - 54.32°
 - 35.67°
 - 50.81°
 - 39.18°

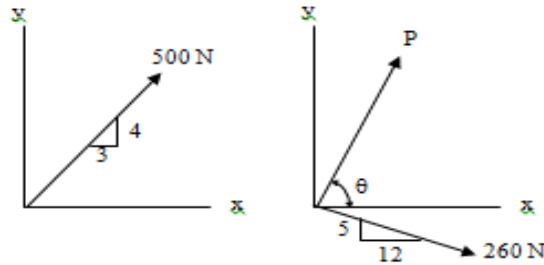
SIT B: The 90-kg person, whose center of gravity is at G, is climbing a uniform ladder. The length of the ladder is 5 m, and its mass is 20 kg. Neglect friction.



- Compute the reaction at A for $x = 1.5$ m in N.
 - 883
 - 662
 - 907
 - 647

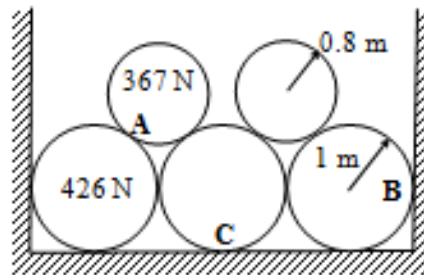
4. Compute the reaction at B for $x = 1.5$ m.
- | | |
|-----------|----------|
| a. 827 N | c. 858 N |
| b. 1073 N | d. 926 N |
5. Find the distance "x" for which the ladder will be ready to fall.
- | | |
|-----------|-----------|
| a. 2.61 m | c. 2.85 m |
| b. 3.24 m | d. 3.55 m |

SIT C: A 500 N force is to be replaced by two coplanar forces "P" at " θ " and 260 N as shown:



6. Calculate the horizontal component of the 500 N force in N:
- | | |
|--------|--------|
| a. 200 | c. 300 |
| b. 100 | d. 150 |
7. What should be the value of "P" so that the resultant of it with the 260 N force is the 500 N force in N:
- | | |
|-----------|-----------|
| a. 503.59 | c. 341.55 |
| b. 422.36 | d. 133.01 |
8. What should be the value of " θ " in degrees?
- | | |
|-----------|-----------|
| a. 24.843 | c. 83.157 |
| b. 78.33 | d. 62.26 |

SIT D: Two drums, 367 N each, are placed on top of 3 larger drums, 426 N each as shown.



9. Calculate the reaction at contact point A in N.
- | | |
|-----------|-----------|
| a. 220.64 | c. 255.23 |
| b. 327.84 | d. 427.84 |
10. Calculate the reaction at contact point B in N.
- | | |
|-----------|-----------|
| a. 217.81 | c. 122.61 |
| b. 163.78 | d. 104.91 |

- END -