1. (2 points) Describe the *principle of transmissibility*.
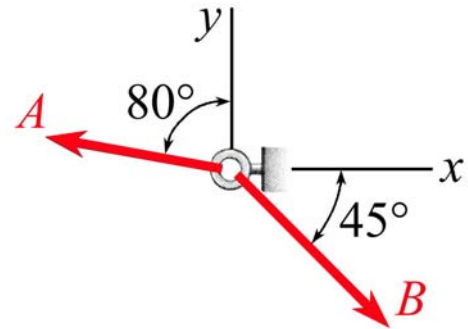
2. (8 points) A 750-N force **A** and an 800-N force **B** act on an eye-bolt as shown. Let
$$\mathbf{A} + \mathbf{B} = \mathbf{C}$$
Using the *parallelogram law*, determine the magnitude C and the directional angle θ_C of **C**.

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1. The *principle of transmissibility* states that the effect of a force on the condition of rest or motion of a rigid body will remain unchanged if the force is moved (*or* transmitted) to act at another point on its line of action. ②
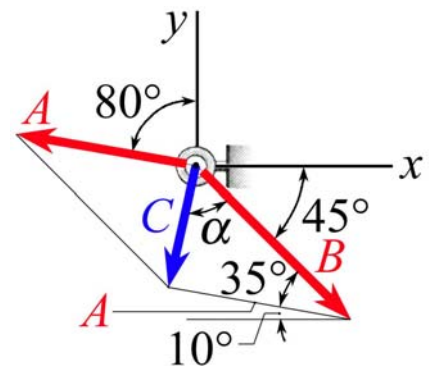
2. The *parallelogram law* for **A** + **B** = **C** is shown. By geometry and *law of cosines*, we write

$A = 750$ N, $B = 800$ N, $80° - 45° = 35°$ ①

$C^2 = 750^2 + 800^2 - 2(750)(800)\cos 35°$

$C = 468.527$ $C = 469$ N ②

By *law of sines*, we write $\dfrac{C}{\sin 35°} = \dfrac{A}{\sin \alpha}$ $\therefore \alpha = 66.658°$ ①

$\theta_C = 360° - (45° + \alpha) = 248.34°$ $\theta_C = 248°$ ②