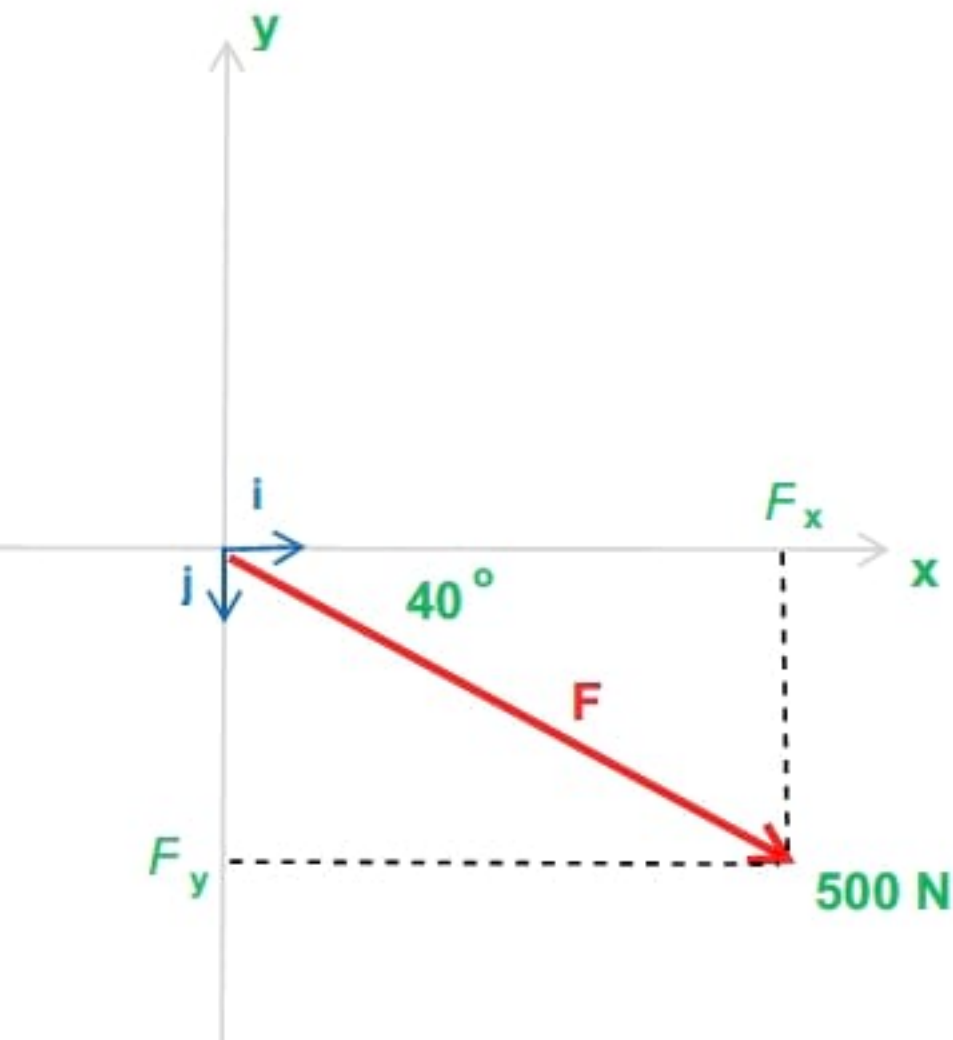
Problema 2-1



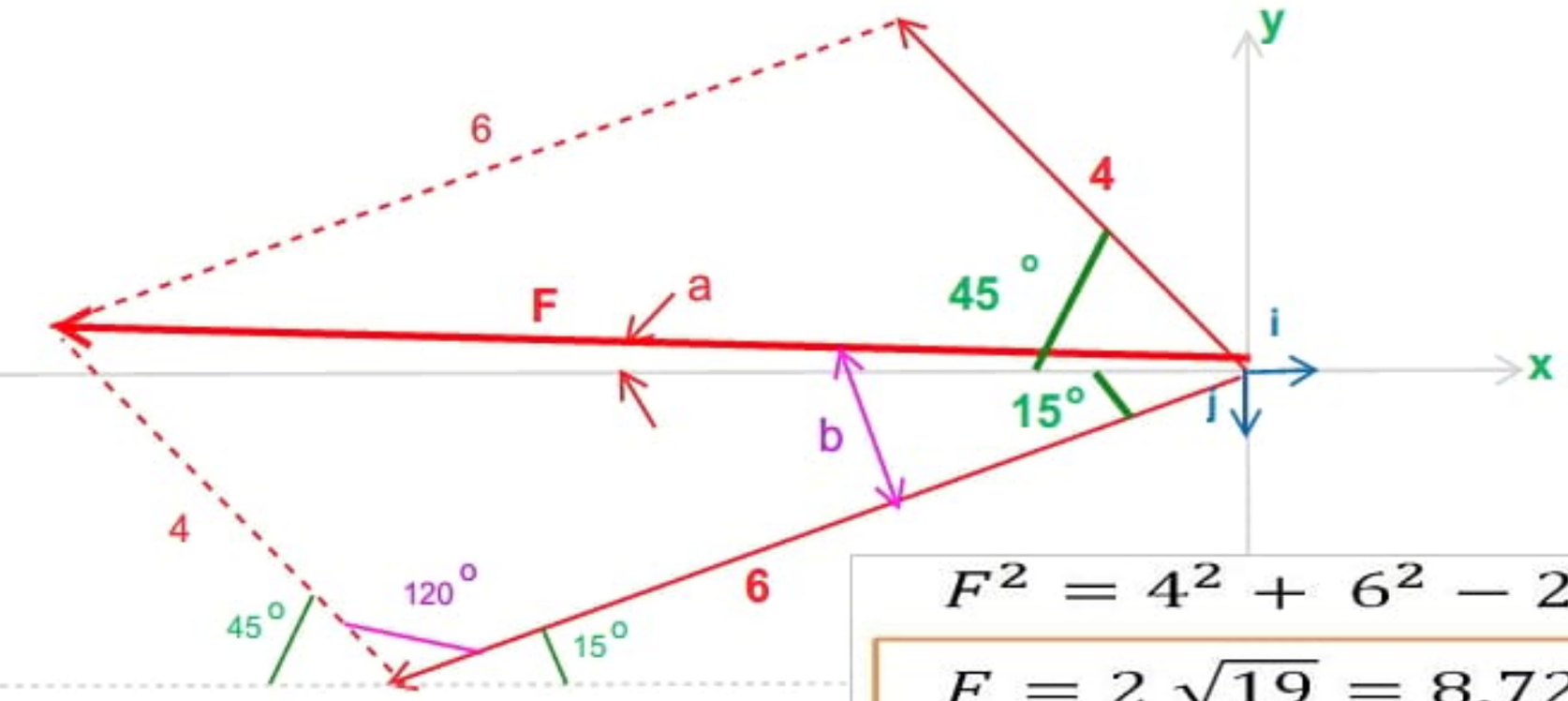
$$\mathbf{F} = F_x\mathbf{i} + F_y\mathbf{j}$$

$$\mathbf{F} = 500\cos 40°\,\mathbf{i} - 500\sin 40°\,\mathbf{j}$$

$$\mathbf{F} = 383\mathbf{i} - 321\mathbf{j}$$

$F_x = 383\ \mathbf{N}$ $\qquad$ $F_y = 321\ \mathbf{N}$

Problema 2-6



$$F^2 = 4^2 + 6^2 - 2 * 4 * 6 \cos 120$$

$$F = 2\sqrt{19} = 8.72 \ \mathbf{kN}$$

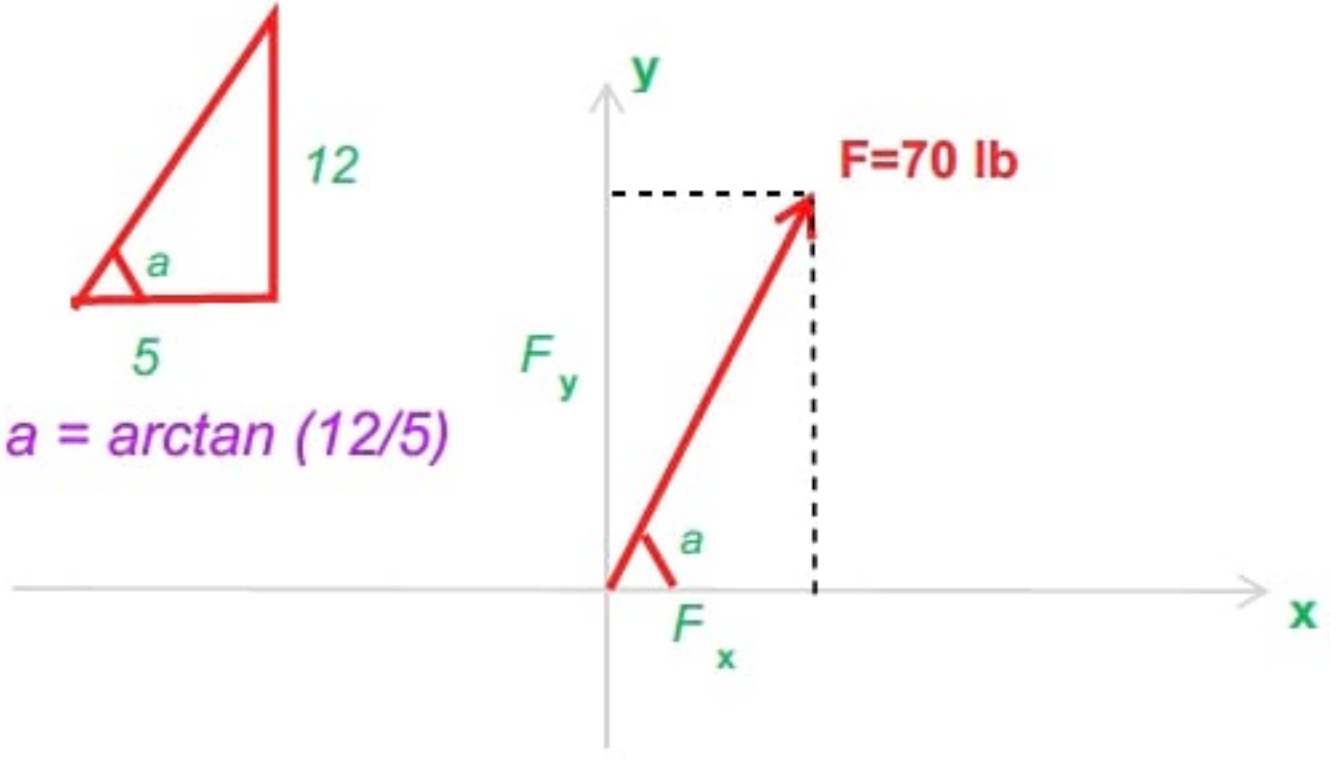
$$\frac{\sin b}{4} = \frac{\sin 120}{8.72}$$

$$\sin b = \frac{4 * 0.687}{8.72} = 0.315$$

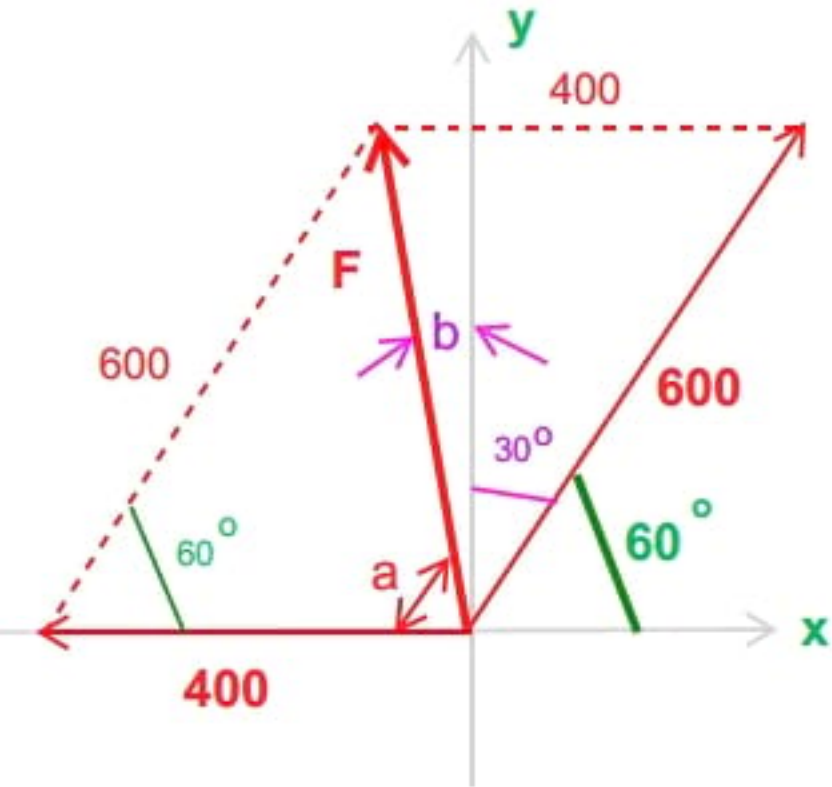
$$b = \sin^{-1} 0.315 = 18.4°$$

$$a = 18.4° - 15° = 3.4°$$

Problema 2-7



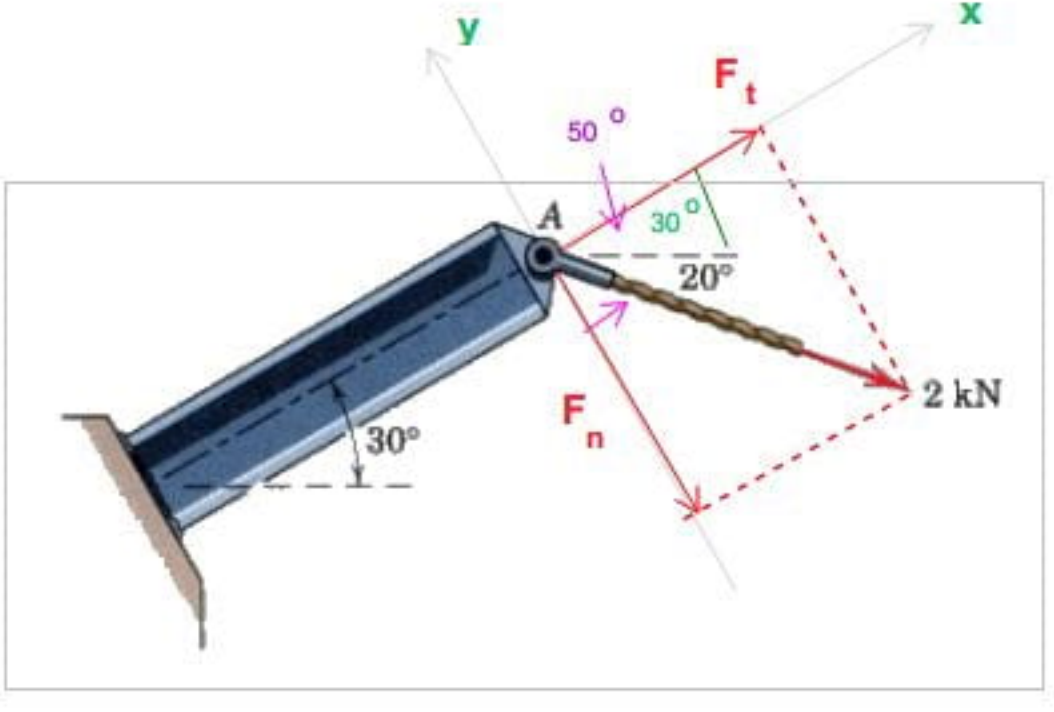
Problema 2-8



Por el teorema del coseno se halla la magnitud de F. Después, por el teorema del seno se halla el ángulo a

Conocido a se deduce b con lo que queda especificada la direccion del vector F como + (90+b)

Problema 2-9

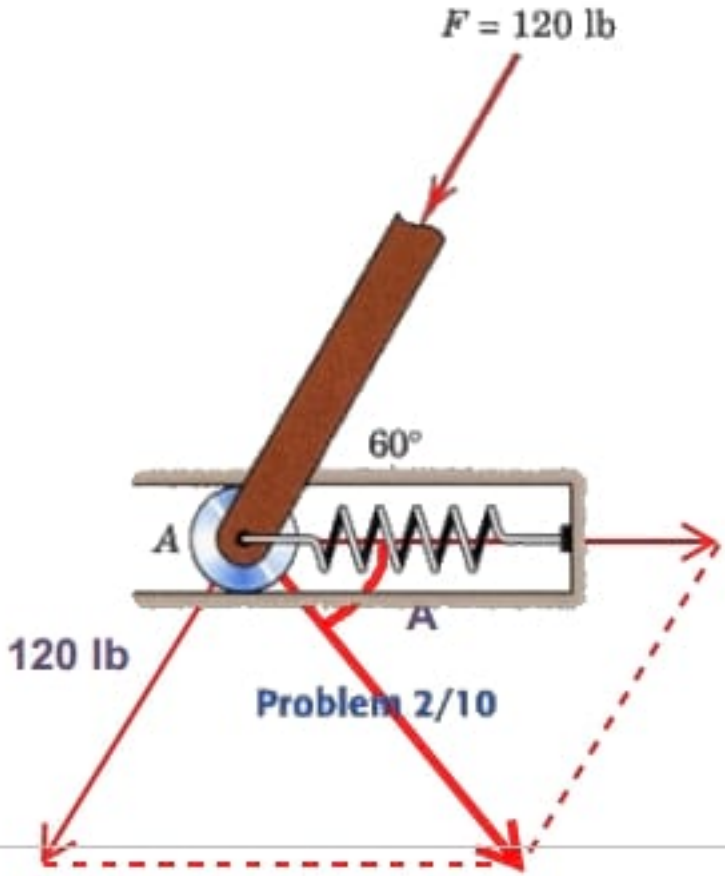


$F_t = 2 \cos 50 = 1.286 \text{ kN}$

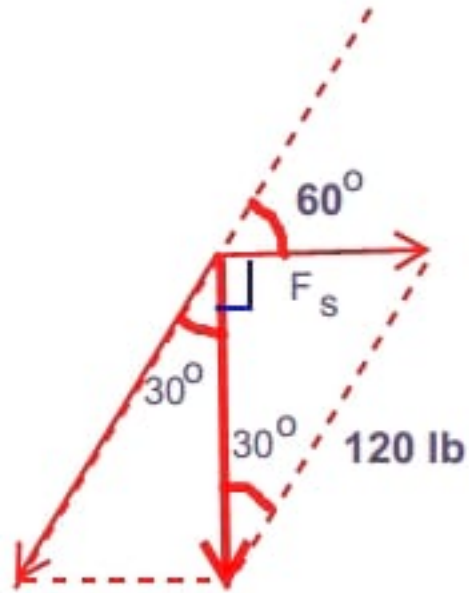
$F_n = 2 \text{ sen } 50 = 1.532 \text{ kN}$

Problema 2-10

Determine the magnitude F_s of the tensile spring force in order that the resultant of $\mathbf{F}_s$ and $\mathbf{F}$ is a vertical force. Determine the magnitude R of this vertical resultant force.



Esta fuerza debe actuar verticalmente
Para ello se requiere que A=90 grados

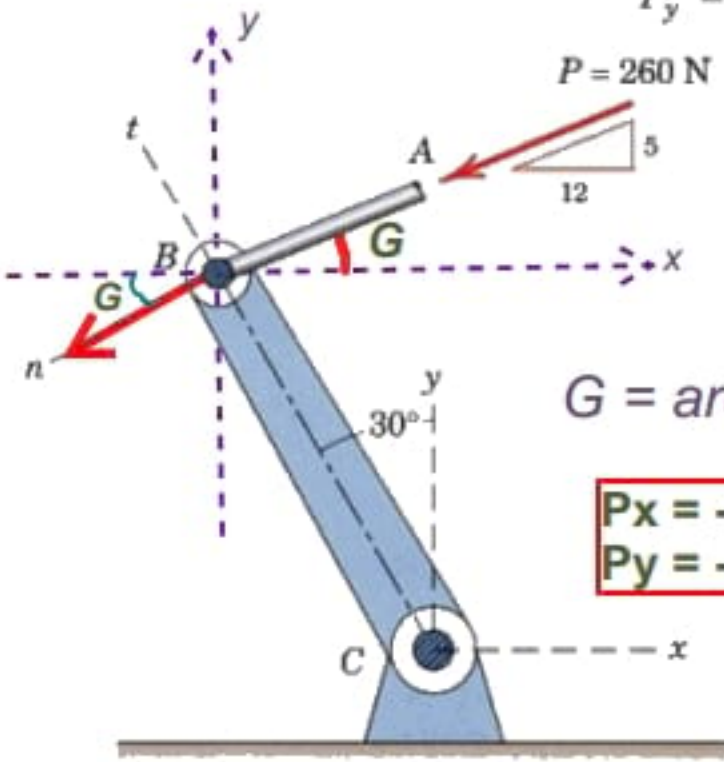


$$Fs = 120 * \text{sen}(30^{o}) = 60 \text{ lb}$$

Problema 2-11

In the design of a control mechanism, it is determined that rod AB transmits a 260-N force $\mathbf{P}$ to the crank BC. Determine the x and y scalar components of $\mathbf{P}$.

Ans. $P_x = -240$ N
$P_y = -100$ N

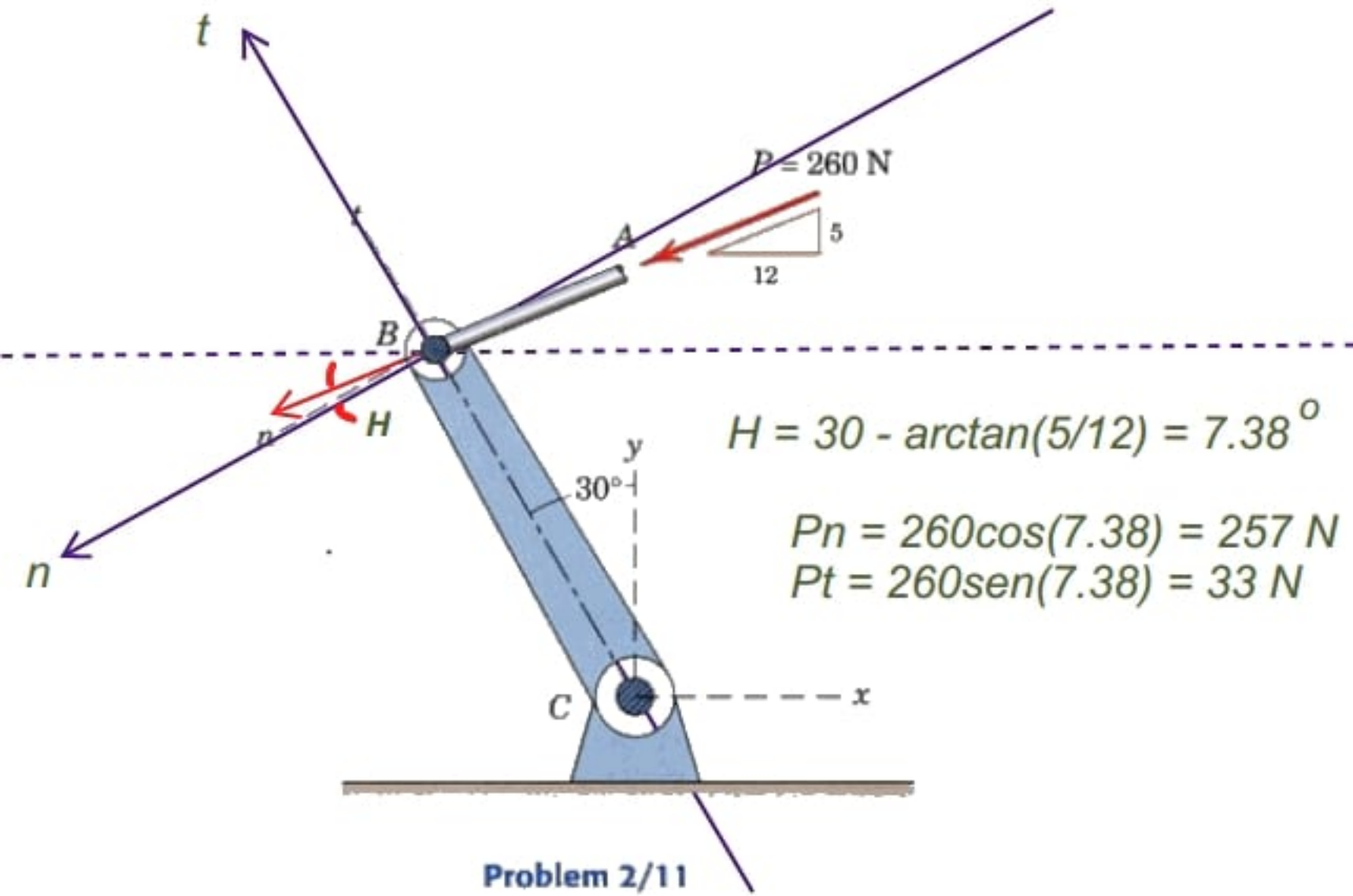


Problem 2/11

$G = \arctan(5/12) = 22.6199^{o}$

Px = - 260cos(22.6) = - 240 N
Py = - 260sen(22.6) = - 100 N

Problema 2-12



$H = 30 - \arctan(5/12) = 7.38^{o}$

$Pn = 260\cos(7.38) = 257\ N$

$Pt = 260\sin(7.38) = 33\ N$

Problem 2/11

For the mechanism of Prob. 2/11, determine the scalar components P_t and P_n of **P** which are tangent and normal, respectively, to crank BC.