

1. Calcula el valor de x en cada caso con la ayuda de la calculadora.

a)  $x = \text{sen}(22.5^\circ) \cdot \tan(22.5^\circ)$

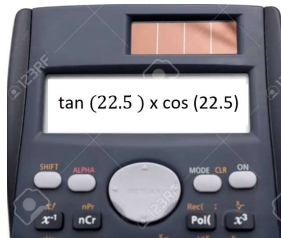
$x = (0.3827) (0.4142)$



$x = 0.1585$

b)  $x = \tan(22.5 \text{ rad}) \cdot \cos(22.5 \text{ rad})$

$x = (0.5579) (-0.8733)$



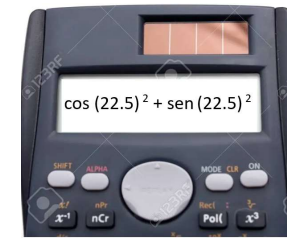
$x = -0.4872$

c)  $x = \cos^2(22.5^\circ) + \text{sen}^2(22.5^\circ)$

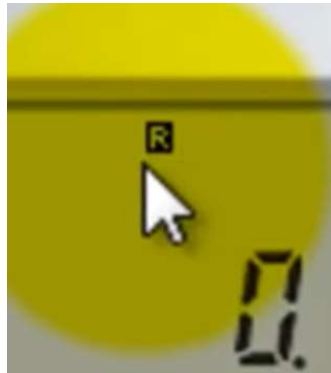
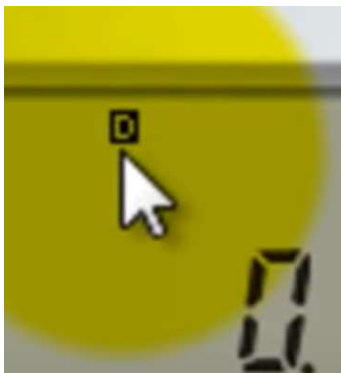
$x = (0.9382)^2 + (0.3461)^2$

$x = 0.8802 + 0.1198$

c)  $x = \cos(22.5^\circ)^2 + \text{sen}(22.5^\circ)^2$



$x = 1$



2. Un poste de alumbrado se mantiene vertical con la ayuda de un tensor, sujeto a 3 m del pie del poste. Si el ángulo del cable que lo sujeta forma un ángulo de  $22.5^\circ$ , con respecto al suelo, ¿cuál es la altura del poste? ¿Cuál es la longitud del tensor?

$$\tan(22.5) = \frac{c.o.}{c.a.}$$

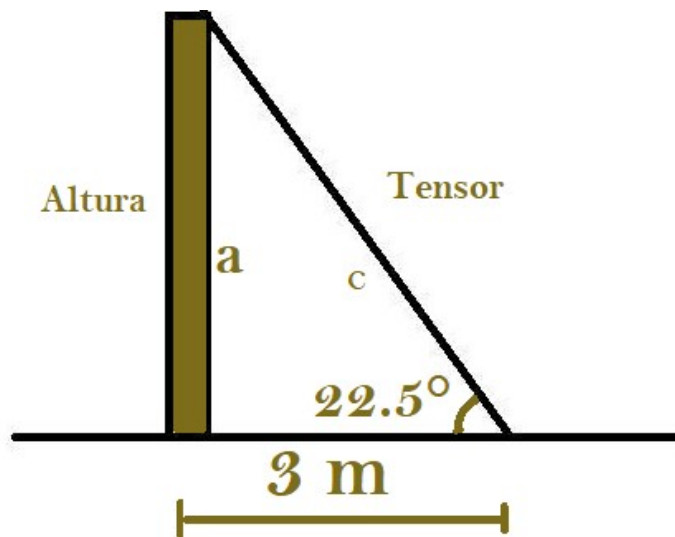
$$\tan(22.5) = \frac{a}{3m}$$

$$0.4142 = \frac{a}{3m}$$

$$0.4142(3m) = a$$

$$1.2426 = a$$

$$\boxed{\text{Altura} = 1.24 \text{ m}}$$



$$c = \sqrt{a^2 + b^2}$$

$$c = \sqrt{1.24^2 + 3^2}$$

$$c = \sqrt{1.5376 + 9}$$

$$c = \sqrt{10.5376}$$

$$c = 3.25$$

$$\boxed{\text{Tensor} = 3.25m}$$

3. Uno de los ángulos agudos del triángulo rectángulo mide  $22.5^\circ$ . Calcular las 6 razones trigonométricas para cada uno de los ángulos agudos del triángulo con ayuda de la calculadora.

$$\text{Sen}(67.5^\circ) = 0.9239$$

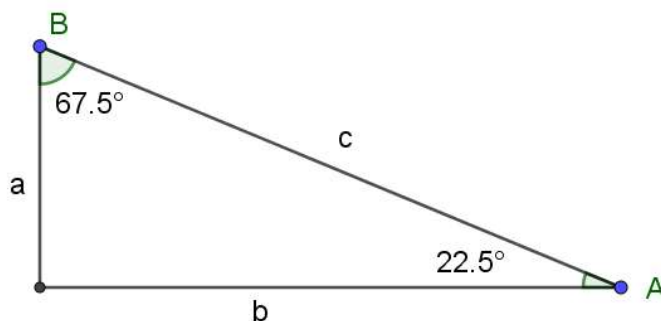
$$\text{Cos}(67.5^\circ) = 0.3827$$

$$\text{Tan}(67.5^\circ) = 2.4142$$

$$\text{Csc}(67.5^\circ) = 1.0824$$

$$\text{Sec}(67.5^\circ) = 2.6131$$

$$\text{Cot}(67.5^\circ) = 0.4142$$



$$\text{Csc } A = \frac{1}{\text{Sen } A}$$

$$\text{Csc } 22.5^\circ = \frac{1}{0.3827}$$

$$\frac{1}{0.3827} = (\text{sen } 22.5) ^{-1} \neq \text{Sen}^{-1} (0.3827)$$



2.6131



2.6131



**22.5°**

$$\text{Sen}(22.5^\circ) = 0.3827$$

$$\text{Cos}(22.5^\circ) = 0.9239$$

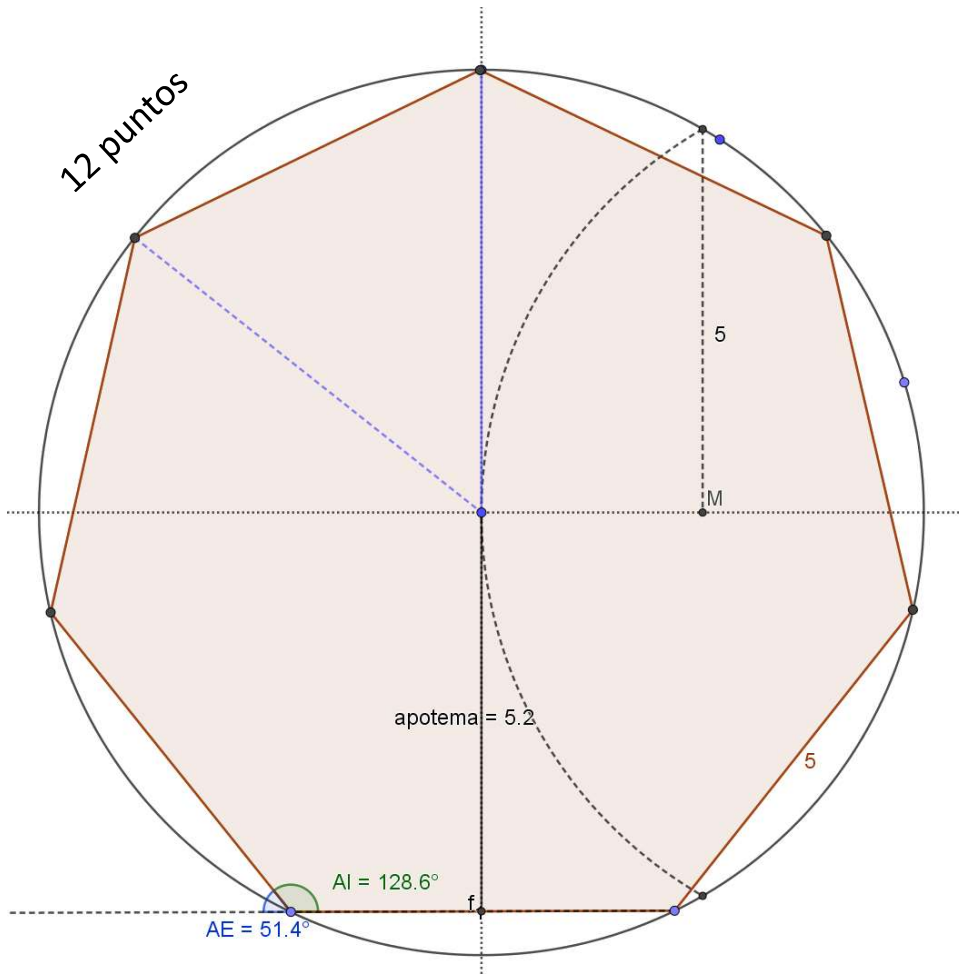
$$\text{Tan}(22.5^\circ) = 0.4142$$

$$\text{Csc}(22.5^\circ) = 2.6131$$

$$\text{Sec}(22.5^\circ) = 1.0824$$

$$\text{Cot}(22.5^\circ) = 2.4142$$

4. Dibuja un heptágono regular, y mide: lado, ángulo interior, ángulo exterior, ángulo central, apotema; calcula: suma de ángulos internos, perímetro y área.



$$Lado = 5\text{cm}$$

$$AC = AE = \frac{360}{7} = 51.4$$

$$AI = 180 - AE = 180 - 51.4 = 128.6$$

$$apotema = \frac{l}{2 \tan\left(\frac{AC}{2}\right)} = \frac{5}{2 \tan\left(\frac{51.4}{2}\right)} = 5.2$$

$$\sum AI = 180^\circ(n - 2) = 180(7 - 5) = 900$$

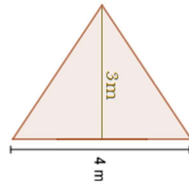
$$\sum AE = 360$$

$$Perimetro = n l = 7 \times 5\text{m} = 35\text{m}$$

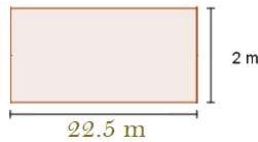
$$\text{Área} = \frac{\text{perímetro} \times \text{apotea}}{2} = \frac{(35\text{m})(5.2\text{m})}{2} = 91\text{m}^2$$

5. Se desea pintar la siguiente figura en la cancha de basquetbol. La pintura a utilizar rinde  $8 \text{ m}^2$  por litro. Calcula el área de la figura y la cantidad de pintura requerida.

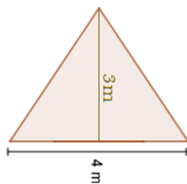
$$A_1 = \frac{bxh}{2} = \frac{(4m)(3m)}{2} = 6m^2$$



$$A_2 = b \times h = (22.5m)(2m) = 45m^2$$

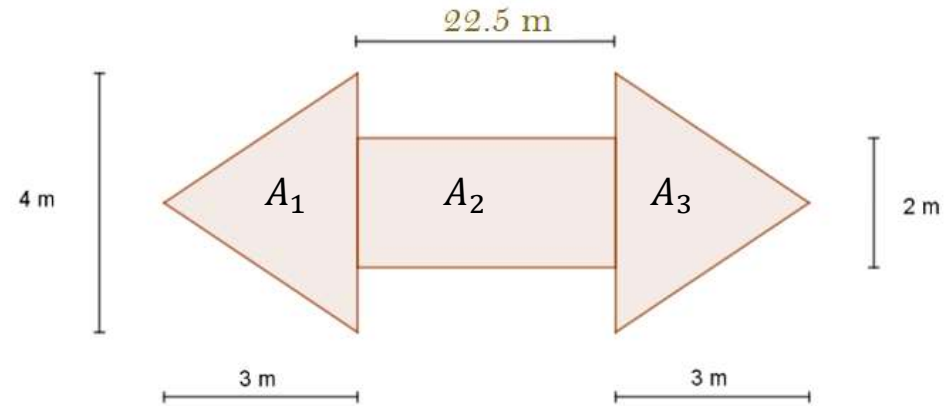


$$A_3 = \frac{bxh}{2} = \frac{(4m)(3m)}{2} = 6m^2$$



$$A_T = A_1 + A_2 + A_3 = 6m^2 + 45m^2 + 6m^2 = 57m^2$$

Área Total=  $57 \text{ m}^2$



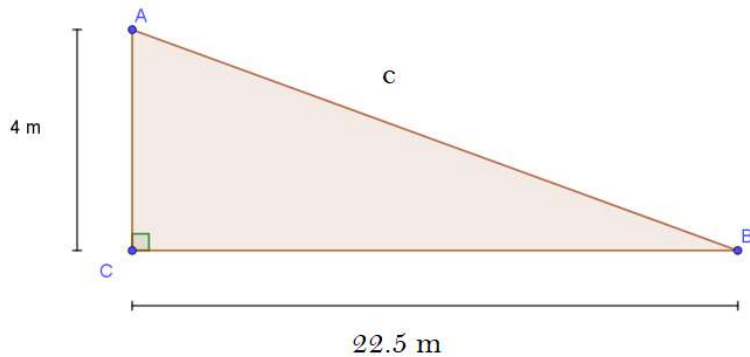
Rendimiento de la pintura:  $8 \text{ m}^2/\text{L}$

$$\text{Pintura} = \frac{\text{Area}}{\text{Rendimiento}}$$

$$\text{Pintura} = \frac{57 \text{ m}^2}{8 \text{ m}^2/\text{L}}$$

$$\text{Pintura} = 7.125 \text{ L}$$

6. Resuelve el siguiente triangulo:



$$c = \sqrt{4^2 + 22.5^2}$$

$$c = \sqrt{9 + 506.25}$$

$$c = \sqrt{522.25}$$

$$\boxed{c = 22.9}$$

$$\text{Sen } A = \frac{\text{co}}{\text{hyp}} = \frac{22.5}{22.9}$$

$$\text{Sen } A = 0.9846$$

$$A = \text{sen}^{-1}(0.9846)$$

$$\boxed{A = 79.9^\circ}$$

$$B = 180^\circ - 90^\circ - A$$

$$B = 180^\circ - 90^\circ - 79.9^\circ$$

$$\boxed{B = 10.1^\circ}$$

$$\text{Perímetro} = a + b + c$$

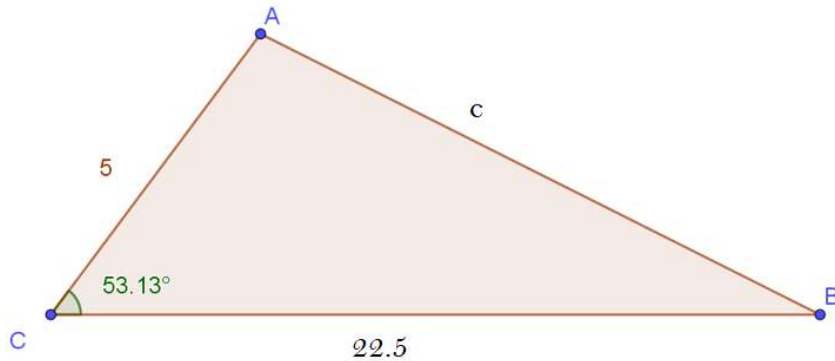
$$\text{Perímetro} = 22.5 \text{ m} + 4 \text{ m} + 22.9 \text{ m}$$

$$\boxed{\text{Perímetro} = 49.4 \text{ m}}$$

$$\text{Área} = \frac{b \times h}{2} = \frac{(22.5 \text{ m})(4 \text{ m})}{2} = 45 \text{ m}^2$$

$$\boxed{\text{Área} = 45 \text{ m}^2}$$

7. Resuelve el siguiente triángulo:



$$\cos A = \frac{b^2 + c^2 - a^2}{2bc} =$$

$$\cos A = \frac{5^2 + 19.91^2 - 22.5^2}{2(5)(19.91)}$$

$$\cos A = \frac{-84.8419}{199.1}$$

$$\cos A = -0.4261$$

$$A = \cos^{-1}(-0.4261)$$

$$\boxed{A = 115.22^\circ}$$

$$B = 180^\circ - A - C = 180^\circ - 115.22^\circ - 53.13^\circ$$

$$\boxed{B = 11.65^\circ}$$

$$c = \sqrt{a^2 + b^2 - 2ab \cos C}$$

$$c = \sqrt{5^2 + 22.5^2 - 2(5)(22.5) \cos 53.13}$$

$$c = \sqrt{531.25 - 225(0.6000)}$$

$$c = \sqrt{396.25}$$

$$\boxed{c = 19.91}$$

$$\text{Perímetro} = a + b + c$$

$$\text{Perímetro} = 22.5 + 5 + 19.9$$

$$\boxed{\text{Perímetro} = 47.41}$$

$$s = \frac{\text{Perímetro}}{2} = \frac{47.4}{2} = 23.7$$

$$\text{Área} = \sqrt{s(s-a)(s-b)(s-c)}$$

$$\text{Área} = \sqrt{23.7(23.7 - 22.5)(23.7 - 5)(23.7 - 19.9)}$$

$$\text{Área} = \sqrt{2025}$$

$$\boxed{\text{Área} = 45}$$