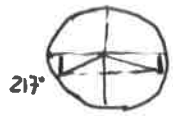
① $\alpha = 1$ radian, $R = 5$ m $\Rightarrow$ Arco $= \alpha \cdot R = 5$ m

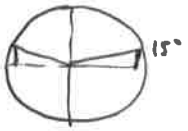
Perímetro $= 2\pi \cdot 5 - 5 + 5 + 5 = 5(2\pi + 1) = \boxed{36'416 \text{ m}}$

② a)



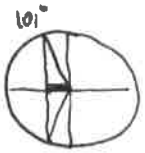
$\alpha = \begin{cases} 217° \\ \boxed{323°} = 360° - (217° - 180°) \end{cases}$

b)



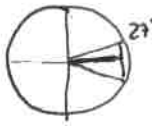
$\alpha = \begin{cases} 15° \\ \boxed{165°} = 180° - 15° \end{cases}$

c)



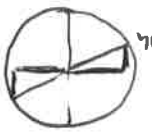
$\alpha = \begin{cases} 101° \\ \boxed{259°} = 360° - 101° \end{cases}$

d)



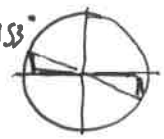
$\alpha = \begin{cases} 27° \\ \boxed{333°} = 360° - 27° \end{cases}$

e)



$\alpha = \begin{cases} 41° \\ \boxed{221°} = 180° + 41° \end{cases}$

f)



$\alpha = \begin{cases} 153° \\ \boxed{333°} = 153° + 180° \end{cases}$

③ a) $\sin x = 0'5983 \Rightarrow \boxed{x = \begin{cases} 37° \\ 143° \end{cases}}$

b) $\operatorname{cosec} x = -1'0457 \Rightarrow x = \begin{cases} -73° = \boxed{287°} \\ \boxed{253°} \end{cases}$

c) $\cos x = -0'7583 \Rightarrow \boxed{x = \begin{cases} 139° \\ 221° \end{cases}}$

d) $\sec x = 1'2690 \Rightarrow \boxed{x = \begin{cases} 38° \\ 322° \end{cases}}$

e) $\operatorname{tg} x = 0'47960 \Rightarrow \boxed{x = \begin{cases} 26° \\ 206° \end{cases}}$

f) $\operatorname{ctg} x = -1'19572 \Rightarrow x = \begin{cases} -40° = \boxed{320°} \\ \boxed{140°} \end{cases}$

④ a) $\sin x = \boxed{0'8} \rightarrow x = 53° \Rightarrow \begin{cases} \cos x = 0'6 \rightarrow \sec x = 1'\widehat{6} \\ \operatorname{tg} x = 1'\widehat{3} \rightarrow \operatorname{ctg} x = 0'75 \end{cases}$

$\sin x = \boxed{0'8} \rightarrow \boxed{\operatorname{cosec} x = 1'25}$

b) $\sin x = \boxed{0'8} \Rightarrow \cos x = \sqrt{1 - 0'8^2} = \boxed{0'6} \Rightarrow \sec \alpha = \boxed{1'\widehat{6}} = \frac{5}{3}$

$\operatorname{tg} x = \frac{0'8}{0'6} = \boxed{1'\widehat{3}} = \frac{4}{3} \rightarrow \operatorname{ctg} x = \boxed{0'75}$

$\boxed{\operatorname{cosec} x = 1'25}$

⑤ a) $\sec x = \boxed{2'6} \Rightarrow x = 67° \Rightarrow \begin{cases} \sin x = 0'\widehat{923076} \rightarrow \operatorname{cosec} x = 1'08\widehat{3} \\ \operatorname{tg} x = 2'4 \rightarrow \operatorname{ctg} x = 0'41\widehat{6} \end{cases}$

$\cos x = \boxed{0'384615}$

b) $\sec x = \boxed{2'6} \Rightarrow \cos x = \frac{1}{2'6} = \boxed{0'\widehat{384615}} = \frac{5}{13}$ $\quad \sin x = \sqrt{1 - 0'\widehat{384615}^2} = \boxed{0'\widehat{923076}} = \frac{12}{13}$

$\boxed{\operatorname{tg} x = 2'4}$

$\boxed{\operatorname{cosec} x = 1'08\widehat{3}}$ = 13/12

$\boxed{\operatorname{ctg} x = 0'41\widehat{6}}$ = 5/12

(6) a) $\operatorname{tg} x = 0'5 \Rightarrow x = 27°$ $\Rightarrow$ $\begin{cases} \sin x = 0'4472 \to \operatorname{cosec} x = 2'2361 \\ \cos x = 0'8944 \to \sec x = 1'1180 \end{cases}$

$\hookrightarrow \operatorname{ctg} x = 2$

b) $\operatorname{tg} x = 0'5 \Rightarrow 1 + 0'5^2 = \sec^2 x \Rightarrow \sec x = \sqrt{1+0'5^2} = 1'1180 = \frac{\sqrt{5}}{2} \Rightarrow \cos x = 0'8944 = \frac{2}{\sqrt{5}}$

$\hookrightarrow \operatorname{ctg} x = 2$

$\sin x = \operatorname{tg} x \cdot \cos x = 0'4472 = 1/\sqrt{5}$

$\operatorname{cosec} x = 2'2361 = \sqrt{5}$

(7) $3\cos x = 5\sin x \Rightarrow \operatorname{tg} x = \frac{3}{5} \Rightarrow x = \begin{cases} 31° \\ 211° \end{cases}$

(8) $\sin A = \frac{5}{13} \Rightarrow \cos A = \pm\sqrt{1-\left(\frac{5}{13}\right)^2} = \pm 0'9231 = \pm \frac{12}{13}$ $\begin{cases} \frac{12}{13} \\ -\frac{12}{13} \end{cases}$ porque A es obtuso.

$\sin 2A = 2 \cdot \frac{5}{13} \cdot \frac{-12}{13} = \frac{-120}{169}$

(9) a) $3\sin^2 x + 4\cos x = 3(1-\cos^2 x) + 4\cos x = -3\cos^2 x + 4\cos x + 3$

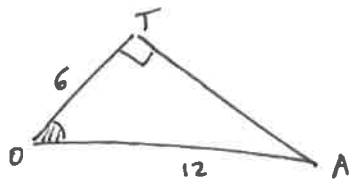
b) $3\sin^2 x + 4\cos x = 0$

$-3\cos^2 x + 4\cos x + 3 = 0$

$\cos x = t$ $\quad -3t^2 + 4t + 3 = 0 \Rightarrow t = \frac{-4 \pm \sqrt{16+36}}{-6} = \frac{-4 \pm \sqrt{52}}{-6} = \frac{-4 \pm 2\sqrt{13}}{-6} = \frac{-2 \pm \sqrt{13}}{-3} =$

$= \begin{cases} +1'8685 \ \times \\ -0'5352 \end{cases} \Rightarrow x = \begin{cases} 122° \\ 238° \end{cases}$

(10)



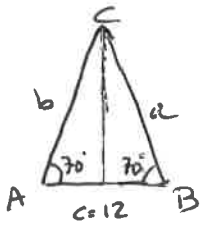
$AT = \sqrt{12^2 - 6^2} = 6\sqrt{3}$ $\quad$ Area $\hat{OAT} = \frac{6 \cdot 6\sqrt{3}}{2} = 18\sqrt{3}\ u^2$

$\cos \hat{O} = \frac{6}{12} \Rightarrow \hat{O} = 60° = \frac{\pi}{3}$ rad.

Area sector $= \frac{6^2 \cdot \pi/3}{2} = 6\pi\ u^2$

Area sombreada $= 18\sqrt{3} - 6\pi = 12'33\ u^2$

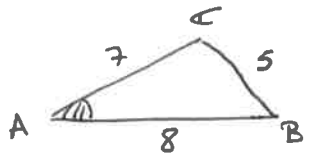
(11)



$\cos 70° = \frac{6}{b} \Rightarrow b = \frac{6}{\cos 70°} = 17'54\ cm = a$ (porque es isósceles)

$C = 40°$

(12)

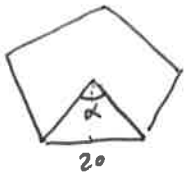


$5^2 = 7^2 + 8^2 - 2\cdot 7\cdot 8 \cdot \cos A$

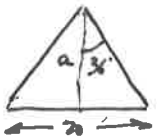
$\cos A = \frac{7^2+8^2-5^2}{2\cdot 7\cdot 8} = 0'7857 \Rightarrow \boxed{\hat{A} = 38°}$

$\text{Area} = \frac{7\cdot 8\cdot \operatorname{sen} 38°}{2} = \boxed{17'32\ m^2}$

(13)



$\alpha = \frac{360}{5} = 72°$

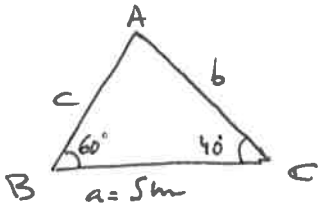


$\operatorname{tg} 36° = \frac{10}{a} \rightarrow a = \frac{10}{\operatorname{tg} 36°} = 13'76\ m$

$\text{Area} = \frac{P\cdot a}{2} = \frac{5\cdot 20\cdot 13'76}{2} = \boxed{688'19\ m^2}$

(14)

$\hat{A} = 180 - 60 - 40 = 80°$



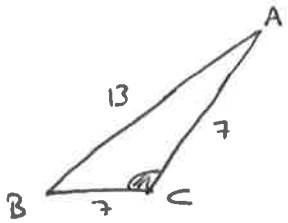
$\frac{AB}{\operatorname{sen} 40°} = \frac{5}{\operatorname{sen} 80°}$

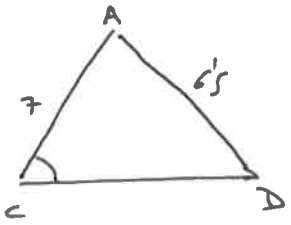
$c = AB = \frac{5\operatorname{sen} 40}{\operatorname{sen} 80} = \boxed{3'264\ m}$

$\text{Area} = \frac{3'264\cdot 5\cdot \operatorname{sen} 60°}{2} = \boxed{7'066\ m^2}$

(15)

$\cos A\hat{C}B = \frac{7^2+7^2-13^2}{2\cdot 7\cdot 7} = -0'7245 \Rightarrow \boxed{A\hat{C}B = 136°}$





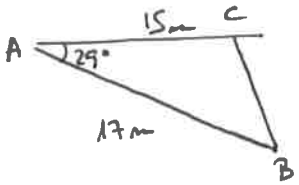
$A\hat{C}D = 180 - A\hat{C}B = 44°$

$\frac{6'5}{\operatorname{sen} 44°} = \frac{7}{\operatorname{sen} \hat{D}} \Rightarrow \operatorname{sen} \hat{D} = \frac{7\cdot \operatorname{sen} 44°}{6'5} = 0'7423 \Rightarrow$

$\Rightarrow \hat{D} = 48° \Rightarrow C\hat{A}D = 180 - 44 - 48 = \boxed{88°}$

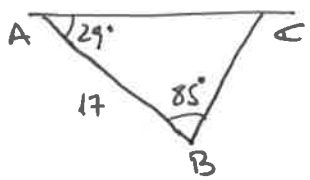
(16)

a)



$\overline{BC} = \sqrt{15^2 + 17^2 - 2\cdot 15\cdot 17\cdot \operatorname{sen} 29°} = \boxed{8'243\ m}$

b)



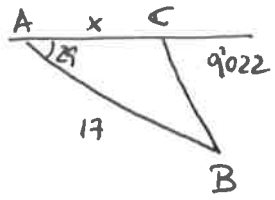
$A\hat{C}B = 180 - 29 - 85 = 66°$

$\frac{\overline{AC}}{\operatorname{sen} 85} = \frac{17}{\operatorname{sen} 66} \Rightarrow \overline{AC} = \frac{17\operatorname{sen} 85}{\operatorname{sen} 66} = \boxed{18'538\ m}$

$\text{Area } A\hat{B}C = \frac{17\cdot 18'538\cdot \operatorname{sen} 29}{2} = \boxed{76'393\ m^2}$

$\frac{BC}{\operatorname{sen} 29°} = \frac{17}{\operatorname{sen} 66°} \Rightarrow \overline{BC} = \frac{17\cdot \operatorname{sen} 29}{\operatorname{sen} 66°} = 9'022\ m$

c)



$9'022^2 = x^2 + 17^2 - 2x \cdot 17 \cos 29°$

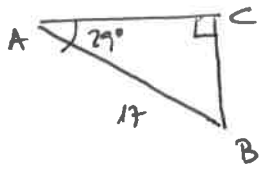
$x^2 - 29'738x + 207'604 = 0$

$x = \dfrac{29'738 \pm \sqrt{29'738^2 - 4 \cdot 207'604}}{2} =$ → 18'54 m (Valor anterior) / → $\boxed{11'20\,m}$

También: $\dfrac{9'022}{\operatorname{sen} 29°} = \dfrac{17}{\operatorname{sen} A\hat{C}B} \Rightarrow \operatorname{sen} A\hat{C}B = \dfrac{17 \cdot \operatorname{sen} 29°}{9'022} = 0'9135 \rightarrow A\hat{C}B = \begin{cases} 66° \\ 114° \end{cases}$

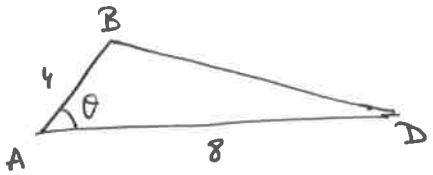
$A\hat{C}B = \begin{cases} 66° \Rightarrow A\hat{B}C = 180 - 29 - 66 = 85° \text{ (Apartado anterior)} \\ 114° \Rightarrow A\hat{B}C = 180 - 29 - 114 = 37° \Rightarrow \dfrac{\overline{AC}}{\operatorname{sen} 37°} = \dfrac{9'022}{\operatorname{sen} 29°} \Rightarrow \overline{AC} = \dfrac{9'022 \operatorname{sen} 37°}{\operatorname{sen} 29°} = 11'2 \checkmark \end{cases}$

d)



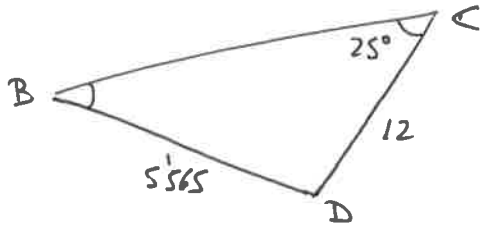
$\operatorname{sen} 29° = \dfrac{\overline{BC}}{17} \Rightarrow \boxed{\overline{BC} = 8'242\,m}$

(17)



a) $BD = \sqrt{4^2 + 8^2 - 2 \cdot 4 \cdot 8 \cos\theta} = \sqrt{80 - 64\cos\theta} = \boxed{4\sqrt{5 - 4\cos\theta}}$ ✓

b) $\theta = 40° \Rightarrow BD = 4\sqrt{5 - 4\cos 40°} = 5'565$



$\dfrac{12}{\operatorname{sen} C\hat{B}D} = \dfrac{5'565}{\operatorname{sen} 25}$

$\operatorname{sen} C\hat{B}D = \dfrac{12 \cdot \operatorname{sen} 25}{5'565} = \boxed{0'9112}$

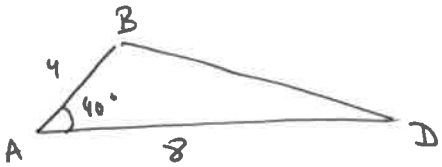
$\operatorname{sen} C\hat{B}D = \boxed{0'9112} \Rightarrow \boxed{C\hat{B}D = \begin{cases} 66° \\ 114° \end{cases}}$

$C\hat{B}D = 66° \Rightarrow B\hat{D}C = 180 - 25 - 66 = 89°$

$\dfrac{BC}{\operatorname{sen} 89°} = \dfrac{5'565}{\operatorname{sen} 25°} \Rightarrow BC = \dfrac{5'565 \cdot \operatorname{sen} 89°}{\operatorname{sen} 25} = 13'167$

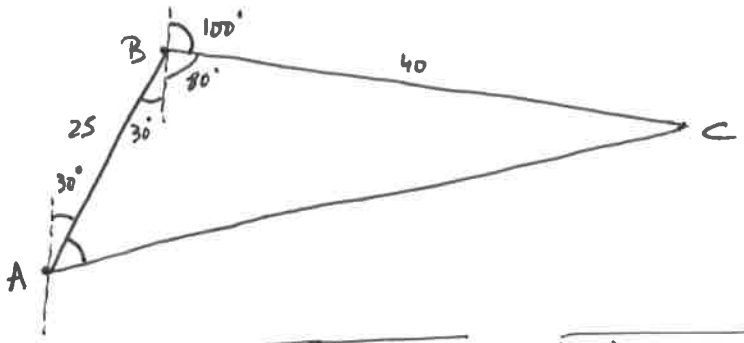
Perímetro = $24 + 13'167 = \boxed{37'732}$

c)



Área = $\dfrac{4 \cdot 8 \cdot \operatorname{sen} 40°}{2} = \boxed{10'285}$

(18)

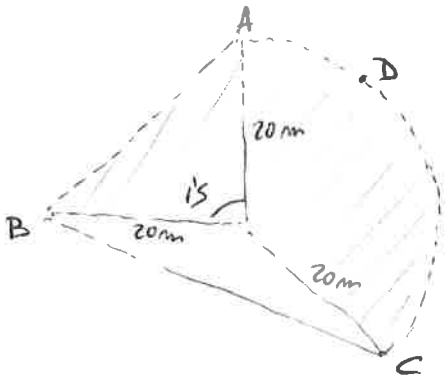


$\overline{AC} = \sqrt{25^2+40^2-2\cdot25\cdot40\cdot\cos110^\circ} = \boxed{53'936\ Km}$

$\frac{40}{\operatorname{sen} B\hat{A}C} = \frac{53'936}{\operatorname{sen}110^\circ} \Rightarrow \operatorname{sen} B\hat{A}C = \frac{40\cdot\operatorname{sen}110^\circ}{53'936} = 0'6969 \Rightarrow B\hat{A}C = 44^\circ$

Acimut 2° barco $= 30+44 = \boxed{74^\circ}$

(19)



a) $\overline{AB} = \sqrt{20^2+20^2-220\cdot20\cdot\cos1'5} = \boxed{27'3\ m}$

b) Area $\overset{\triangle}{AOB} = \frac{20\cdot20\operatorname{sen}1'5}{2} = \boxed{199\ m^2}$

c) $A\hat{O}C = 2\pi - 1'5 - 2'4 = 2\pi - 3'9$ rad

Arco $\overset{\frown}{ADC} = 20\cdot(2\pi-3'9) = \boxed{47'7\ m}$

d) Area sector $O\overset{\frown}{ADC} = \frac{20^2\cdot(2\pi-3'9)}{2} = 477\ m^2$

Area Sombreada $= 199+477 = \boxed{676\ m^2}$

e) $676\ m^2 \cdot \frac{1\ lata}{140\ m^2} \cdot \frac{\$32}{1\ lata} = 155\$$

No sería correcto este cálculo. La pintura se vende en latas.

$\frac{676}{140} = 4'8285\ldots \rightarrow$ 5 latas $\Rightarrow 5\cdot32 = \boxed{160\$}$