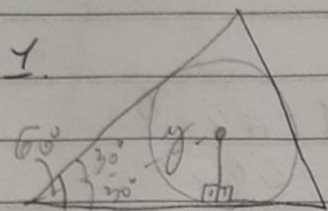


Tarefa Básica



$$\tan 30^\circ = \frac{1}{y}$$

$$y = 2 \quad (D)$$

2.

$$180^\circ - 50^\circ = 130^\circ$$

$$MNP + NPM = 2 \cdot (TPN + PNT)$$

$$MNP + NPM = 2 \cdot (50^\circ)$$

$$NTP + TPN + PNT = 180^\circ$$

$$MNP + NPM = 100^\circ$$

$$130^\circ + TPN + PNT = 180^\circ$$

$$TPN + PNT = 180^\circ - 130^\circ$$

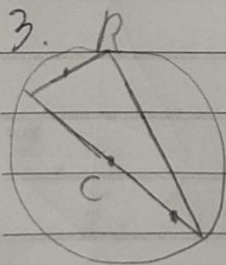
$$NMP + MNP + NPM = 180^\circ$$

$$TPN + PNT = 50^\circ$$

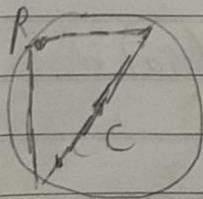
$$NMP + 100^\circ = 180^\circ$$

$$NMP = 180^\circ - 100^\circ$$

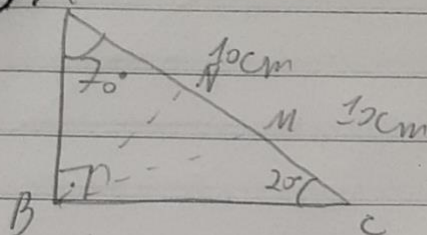
$$NMP = 80^\circ \quad (E)$$



(B) é retângulo



5.1



a) $AB^2 = AM^2 + BM^2 - 2 \cdot AM \cdot BM \cdot \cos(\widehat{AMB})$

$(20 \cdot \cos(70^\circ))^2 = 10^2 + BM^2 - 2 \cdot 10 \cdot BM \cdot \cos(\widehat{AMB})$

(I) $400 \cdot \cos^2(70^\circ) = 100 + BM^2 - 20 \cdot BM \cdot \cos(\widehat{AMB})$

$BC^2 = MC^2 + BM^2 - 2 \cdot MC \cdot BM \cdot \cos(\widehat{BMC})$

$(20 \cdot \sin(70^\circ))^2 = 10^2 + BM^2 - 2 \cdot 10 \cdot BM \cdot \cos(\widehat{AMB})$

$400 \cdot \sin^2(70^\circ) = 100 + BM^2 - 20 \cdot BM \cdot \cos(\widehat{AMB})$ (II)

$400 \cdot \cos^2(70^\circ) + 400 \cdot \sin^2(70^\circ) =$

$100 + BM^2 - 20 \cdot BM \cdot \cos(\widehat{AMB}) +$

$100 + BM^2 - 20 \cdot BM \cdot \cos(\widehat{AMB}) \rightarrow$

$400 \cdot (\cos^2(70^\circ) + \sin^2(70^\circ)) = 200 + 2 \cdot BM^2 \rightarrow$

$400 = 200 + 2 \cdot BM^2$

$200 = 2 \cdot BM^2$

$BM = \sqrt{\frac{200}{2}}$

$BM = \sqrt{100}$

$BM = 10 \text{ cm}$

b) $\widehat{ABN} = \widehat{NBC} = 45^\circ$ $\widehat{NBC} = \widehat{MBN} + \widehat{MBC}$

$\frac{BM}{\sin(20^\circ)} = \frac{MC}{\sin(\widehat{MBC})}$

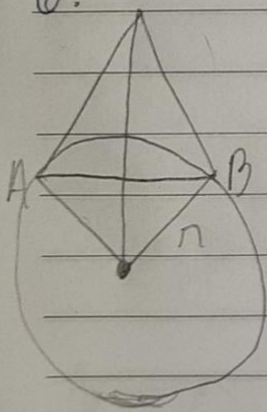
$45^\circ = \widehat{MBN} + 20^\circ$

$\frac{10}{\sin(20^\circ)} = \frac{10}{\sin(\widehat{MBC})}$

$\widehat{MBN} = 25^\circ$

$\widehat{MBC} = 20^\circ$

6. P



$$\angle APB = \angle BPA = \angle PAB = 60^\circ$$

$$\angle OPB = \angle OPA = 30^\circ$$

$$\text{then } \angle OPA = \frac{OA}{PO} \rightarrow \frac{1}{2} = \frac{r}{PO} \rightarrow PO = 2r \text{ (C)}$$