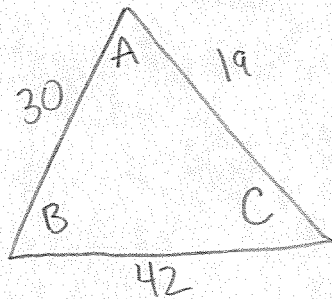


§10.2 #16  $a=42, b=19, c=30$



Find A

$$42^2 = 30^2 + 19^2 - 2(30)(19)\cos(A)$$

$$\frac{42^2 - 30^2 - 19^2}{-2(30)(19)} = \cos(A)$$

$$\Rightarrow A = \cos^{-1}\left(\frac{42^2 - 30^2 - 19^2}{-2(30)(19)}\right) \approx 116.18^\circ$$

Find B

$$19^2 = 30^2 + 42^2 - 2(30)(42)\cos(B)$$

$$\Rightarrow \frac{19^2 - 30^2 - 42^2}{-2(30)(42)} = \cos(B)$$

$$\Rightarrow B = \cos^{-1}\left(\frac{19^2 - 30^2 - 42^2}{-2(30)(42)}\right) \approx 23.95^\circ$$

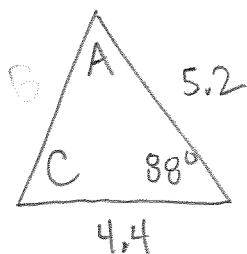
Find C

$$116.18^\circ + 23.95^\circ + C = 180^\circ$$

$$C = 180^\circ - 116.18^\circ - 23.95^\circ = 39.87^\circ$$

#22 |  $B = 88^\circ$ ,  $a = 4.4$ ,  $c = 5.2$

2



Soln:

Find b ← only option!

$$b^2 = (4.4)^2 + (5.2)^2 - 2(4.4)(5.2)\cos(88^\circ)$$

↓

$$b = \sqrt{(4.4)^2 + (5.2)^2 - 2(4.4)(5.2)\cos(88^\circ)}$$
$$\approx 6.69$$

Find A

$$(4.4)^2 = (6.69)^2 + (5.2)^2 - 2(6.69)(5.2)\cos(A)$$

↓

$$A = \cos^{-1}\left(\frac{(4.4)^2 - (6.69)^2 - (5.2)^2}{-2(6.69)(5.2)}\right) \approx 41.09^\circ$$

Find C

$$41.09^\circ + 88^\circ + C = 180^\circ$$

$$\Rightarrow C = 180^\circ - 41.09^\circ - 88^\circ = 50.91^\circ$$

$$\#9 \quad P_1 = (5, 1), P_2 = (3, -2), P_3 = (-1, 3), P_4 = (9, -4)$$

$$\text{vector } \vec{P_1 P_2} = P_2 - P_1 = \langle 3, -2 \rangle - \langle 5, 1 \rangle = \langle 3-5, -2-1 \rangle = \langle -2, -3 \rangle$$

↑      ↑  
tip   tail

$$\text{vector } \vec{P_3 P_4} = P_4 - P_3 = \langle 9, -4 \rangle - \langle -1, 3 \rangle = \langle 9-(-1), -4-3 \rangle = \langle 10, -7 \rangle$$

↑  
different!  
not equal

$$\#18 \quad \vec{u} = \langle 2, -3 \rangle, \vec{v} = \langle 1, 5 \rangle$$

$$\vec{u} + \vec{v} = \langle 2, -3 \rangle + \langle 1, 5 \rangle = \langle 2+1, -3+5 \rangle = \langle 3, 2 \rangle$$

$$\vec{u} - \vec{v} = \langle 2, -3 \rangle - \langle 1, 5 \rangle = \langle 2-1, -3-5 \rangle = \langle 1, -8 \rangle$$

$$\begin{aligned} 2\vec{u} - 3\vec{v} &= 2\langle 2, -3 \rangle - 3\langle 1, 5 \rangle = \langle 4, -6 \rangle - \langle 3, 15 \rangle \\ &= \langle 4-3, -6-15 \rangle \\ &= \langle 1, -21 \rangle \end{aligned}$$