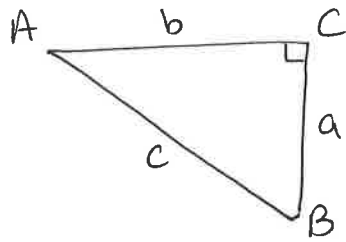


1. $a=12, c=20$



~~$20^2 = 12^2 + b^2$~~

$$b = \sqrt{20^2 - 12^2} \approx 16 \text{ cm}$$

$$\sin A = \left(\frac{12}{20}\right)$$

$$A = \sin^{-1}\left(\frac{12}{20}\right)$$

$$A \approx 36.9^\circ$$

$$\cos B = \left(\frac{12}{20}\right)$$

$$B = \cos^{-1}\left(\frac{12}{20}\right)$$

$$B \approx 53.1^\circ$$

3. $c=4.5, \hat{B}=55^\circ$

$$\hat{A} = 90 - 55 = 35^\circ$$

$$\cos 55^\circ = \frac{a}{4.5}$$

$$a = 4.5 \cos 55^\circ$$

$$a \approx 2.58 \text{ cm}$$

$$\sin 55^\circ = \frac{b}{4.5}$$

$$b = 4.5 \sin 55^\circ$$

$$b \approx 3.69$$

5. $a=11, \hat{A}=35^\circ$

$$\hat{B} = 55^\circ$$

$$\tan 35^\circ = \frac{11}{b}$$

$$b = 11 \tan 35^\circ$$

$$b \approx 15.7 \text{ cm}$$

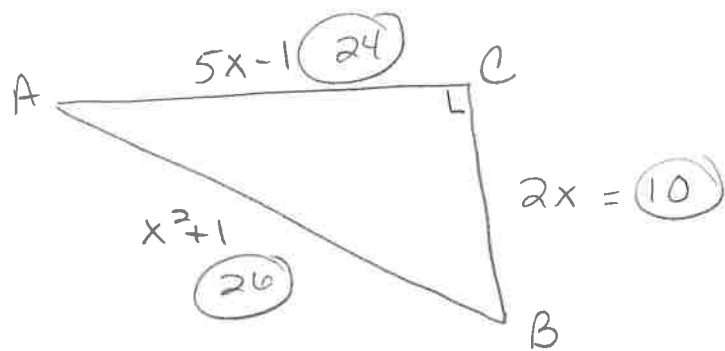
$$\sin 35^\circ = \frac{11}{c}$$

$$c = 11 \sin 35^\circ$$

$$c \approx 19.2 \text{ cm}$$

7. If $a = 2x$, $b = 5x - 1$ and $c = x^2 + 1$ ($x \in \mathbb{Z}$)

find the value of x , and the angles \hat{A} and \hat{B} .



find x-value

$$(2x)^2 + (5x-1)^2 = (x^2+1)^2$$

$$4x^2 + 25x^2 - 10x + 1 = x^4 + 2x^2 + 1$$

$$-x^4 + 27x^2 - 10x = 0$$

$$-x(x^3 - 27x + 10) = 0$$

x cannot be zero or negative

Ideas: graph $y = x^3 - 27x + 10$

the zeros: 5, .42?

but $x \in \mathbb{Z}$, leaves 5

Idea: use synthetic division

$$\boxed{x=5}$$

$$\sin(\hat{A}) = \frac{10}{24}$$

$$\hat{A} = \sin^{-1}\left(\frac{10}{24}\right) \approx 24.6^\circ$$

$$\hat{B} = 90 - 24.6^\circ = 65.4^\circ$$

p. 368

1. a.

$$b = 432 \text{ cm}$$

$$A = 30^\circ$$

$$B = 60^\circ$$

b. $B = 45^\circ$

$$a = 9 \text{ cm}$$

$$b = 12.7$$

c. $A = 30^\circ$

$$a = 2.25 \text{ cm}$$

$$b = 3.90 \text{ cm}$$

d. $a = \sqrt{12} \approx 3.46$

$$A = 30^\circ$$

$$B = 60^\circ$$

e. $b = \sqrt{50} \times 7.07$

$$A = 45^\circ$$

$$B = 45^\circ$$

$$\#3 \quad \hat{A} = 60^\circ, \hat{C} = 90^\circ, BC = x+2, AB = x^2-4$$

$$\sin 60^\circ = \frac{x+2}{x^2-4}$$

$$\sin 60^\circ = \frac{x+2}{(x+2)(x-2)}$$

$$\sin 60^\circ = \frac{1}{x-2}$$

$$(x-2)\sin 60^\circ = 1$$

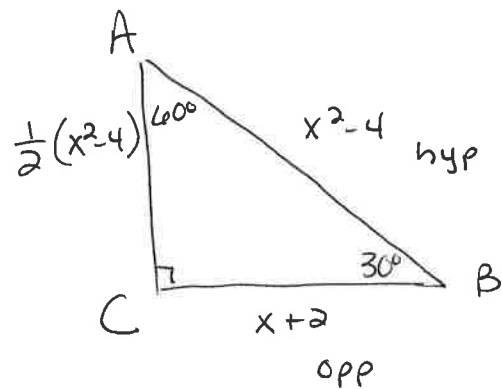
$$x\sin 60^\circ - 2\sin 60^\circ = 1$$

$$x\sin 60^\circ = 1 + 2\sin 60^\circ$$

$$x = \frac{1 + 2\sin 60^\circ}{\sin 60^\circ}$$

a) $X \approx \text{~~0.92~~ } 3.15$

b) $AC \approx 2.96$



#5

$$w^2 = 4^2 + 9^2$$

$$w = \sqrt{4^2 + 9^2}$$

$$w \approx 9.8$$

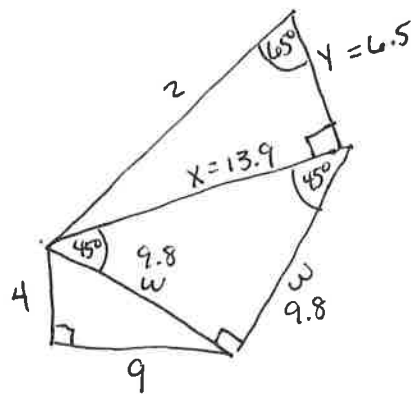
$$x^2 = \sqrt{9.8^2 + 9.8^2}$$

$$x \approx 13.9$$

$$\tan 65^\circ = \frac{13.9}{y}$$

$$y = 13.9 / \tan 65^\circ$$

$$y \approx 6.5$$



$$z^2 = 13.9^2 + 6.5^2$$

$$z \approx 15.3$$