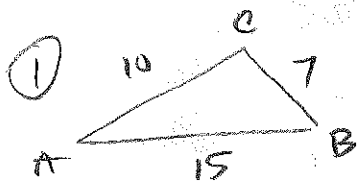


P443 # 1, 3, 6, 9, 23, 24, 31, 34, 39

Law of Cosines



$$7^2 = 10^2 + 15^2 - 2(10)(15)\cos A$$

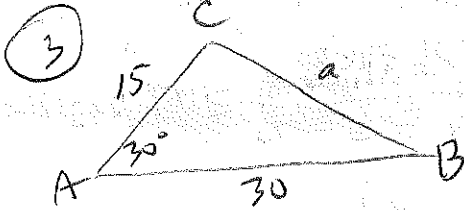
$$\cos A = \frac{7^2 - 10^2 - 15^2}{-300} = \frac{23}{25}$$

$$A \approx 23.07^\circ$$

$$\frac{10^2 - 7^2 - 15^2}{-2(7)(15)} = \cos B = \frac{29}{35}$$

$$B \approx 34.05^\circ$$

$$C \approx 122.88^\circ$$



$$a^2 = 15^2 + 30^2 - 2(15)(30)\cos 30^\circ$$

$$\approx 345.571$$

$$\Rightarrow a \approx 18.59$$

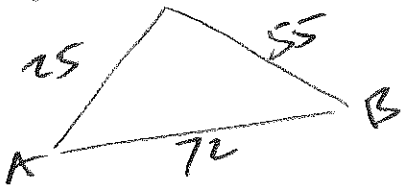
$$15^2 = 18.59^2 + 30^2 - 2(18.59)(30)\cos B$$

$$\cos B = \frac{15^2 - 18.59^2 - 30^2}{-2(18.59)(30)} \approx .915$$

$$B \approx 23.79^\circ$$

$$C = 180 - 30 - 23.79 \approx 126.21^\circ$$

b) $a=55, b=25, c=72$



$$\cos A = \frac{55^2 - 25^2 - 72^2}{-2(25)(72)} = \frac{58}{75}$$

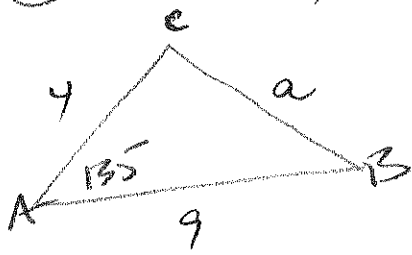
$$A \approx 39.35^\circ$$

$$\cos B = \frac{25^2 - 55^2 - 72^2}{-2(55)(72)} \approx \frac{158}{65}$$

$$B \approx 16.75^\circ$$

$$C \approx 123.90^\circ$$

29) $A = 135^\circ, b = 4, c = 9$



$$a^2 = 4^2 + 9^2 - 2(4)(9)\cos 135$$

$$a \approx 12.16$$

$$\cos B = \frac{4^2 + (12.16)^2 - 9^2}{-2(12.16)(9)} \approx -0.9726$$

$$B \approx 13.45^\circ$$

$$C = 180 - 135 - 13.45 = 31.55^\circ$$

23) $a = 5, b = 7, c = 10$

$$s = \frac{5+7+10}{2} = 11$$

$$\therefore A = \sqrt{11(11-5)(11-7)(11-10)}$$

$$= \sqrt{11 \cdot 6 \cdot 4 \cdot 1} = \sqrt{264} = 2\sqrt{66} \approx 16.25$$

$$\begin{array}{r} 2 \sqrt{2} \quad 132 \\ 2 \quad 66 \\ 2 \quad 33 \\ 3 \quad 11 \\ 11 \end{array}$$

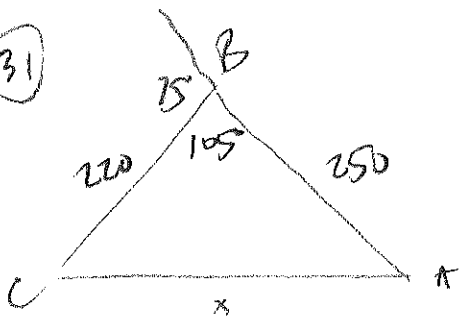
24) $a = 12, b = 15, c = 9$

$$s = \frac{12+15+9}{2} = 18$$

$$\therefore A = \sqrt{18(18-12)(18-15)(18-9)}$$

$$= \sqrt{18 \cdot 6 \cdot 3 \cdot 9} = 9\sqrt{36} = 54$$

31)

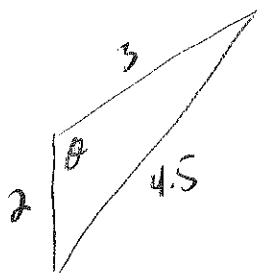


$$x^2 = 220^2 + 250^2 - 2(220)(250)\cos 105^\circ$$

$$\approx 139,370.095 \text{ m}$$

$$\Rightarrow x \approx 373.32 \text{ m}$$

34

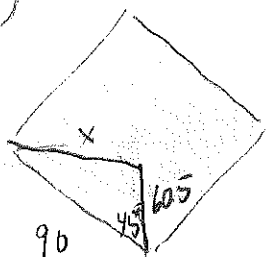


$$4.5^2 = 2^2 + 3^2 - 2(2)(3) \cos \theta$$

$$\cos \theta = \frac{2^2 + 3^2 - 4.5^2}{2(2)(3)} \approx -0.42$$

$$\Rightarrow \theta = 127.17^\circ$$

39



$$x^2 = 90^2 + 60.5^2 - 2(90)(60.5) \cos 45^\circ$$

$$\approx 4059.86$$

$$\Rightarrow x \approx 63.72 \text{ ft}$$

