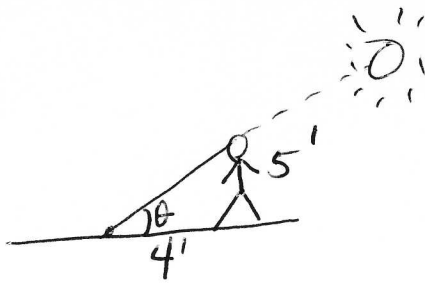


(17)

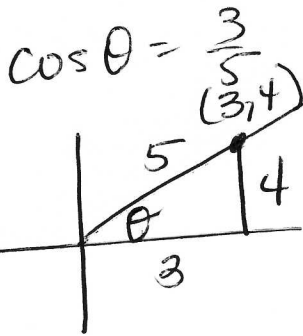


$$\tan \theta = \frac{5}{4}$$

$$\theta = \tan^{-1}(5/4)$$

$$\theta \approx 51.3^\circ$$

(18)



θ is in Q1.

$$\sin \theta = 4/5$$

$$\cos \theta = 3/5$$

$$\sin 2\theta = 2 \sin \theta \cos \theta$$

$$= 2 \cdot \frac{4}{5} \cdot \frac{3}{5}$$

$$= \frac{24}{25}$$

(19)

a) $\beta = 81^\circ$ $b = 11$ $c = 12$

$$\frac{\sin \beta}{b} = \frac{\sin \gamma}{c}$$

$$\frac{\sin 81^\circ}{11} = \frac{\sin \gamma}{12}$$

$$\sin \gamma = \frac{12 \sin 81^\circ}{11}$$

$$\sin \gamma \approx 1.077$$

\Rightarrow no triangle

b) $a = 2, b = 3, c = 4$

$$a^2 = b^2 + c^2 - 2bc \cos \alpha$$

$$4 = 9 + 16 - 2(3)(4) \cos \alpha$$

$$4 = 25 - 24 \cos \alpha$$

$$-21 = -24 \cos \alpha$$

$$21/24 = \cos \alpha$$

$$\alpha \approx 29^\circ$$

$$b^2 = a^2 + c^2 - 2ac \cos \beta$$

$$3^2 = 2^2 + 4^2 - 2(2)(4) \cos \beta$$

$$9 = 4 + 16 - 16 \cos \beta$$

$$9 = 20 - 16 \cos \beta$$

$$-11 = -16 \cos \beta$$

$$11/16 = \cos \beta$$

$$\beta \approx 47^\circ$$

$$\gamma = 180^\circ - (29^\circ + 47^\circ)$$

$$\gamma \approx 104^\circ$$