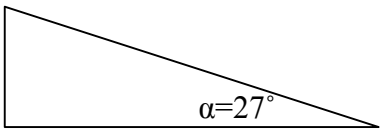
Övningsuppgifter på trigonometri

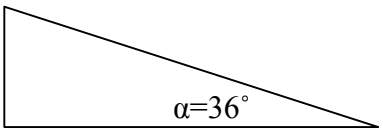
Uppgift 1: Beräkna längden av hypotenusan för följande trianglar

a)



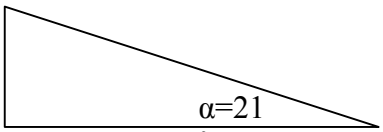
9,0 cm

b)



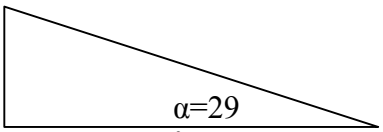
8,0 cm

c)



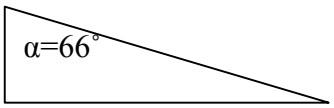
10 cm

d)



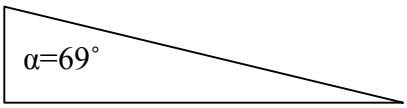
22 cm

e)



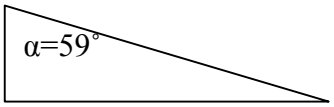
7,0 cm

f)



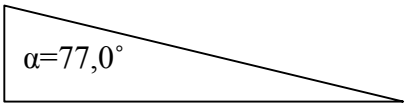
6,0 cm

g)



45 cm

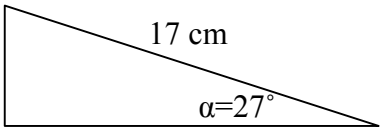
h)



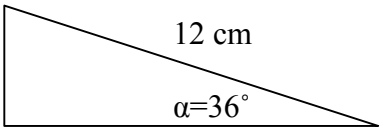
11,0 cm

Uppgift 2: Beräkna höjden i följande trianglar

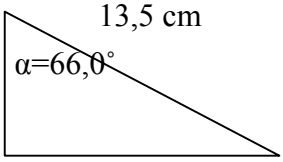
a)



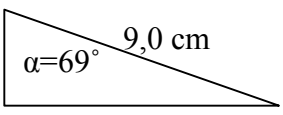
b)



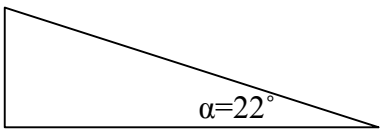
c)



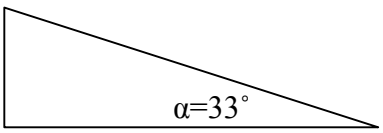
d)



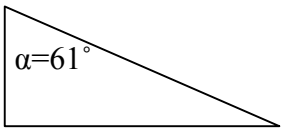
e)



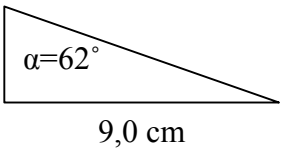
f)



g)

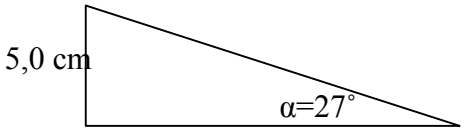


h)

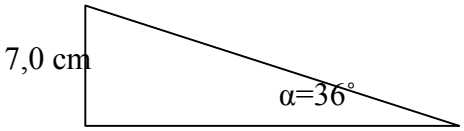


Uppgift 3: Beräkna längden av basen i följande trianglar

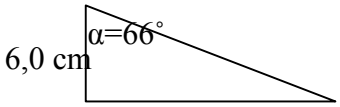
a)



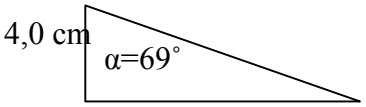
b)



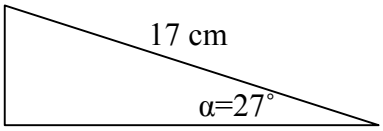
c)



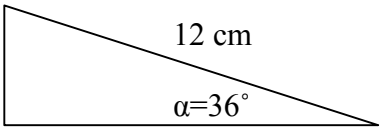
d)



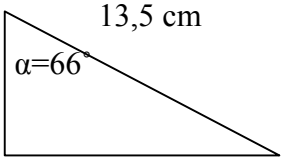
e)



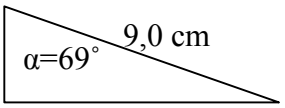
f)



g)

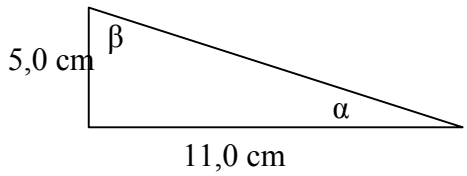


h)

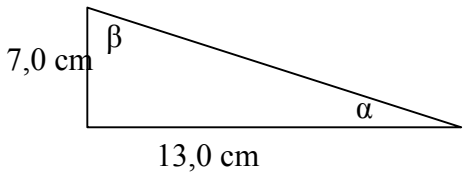


Uppgift 4: Beräkna vinklarna α och β i följande trianglar

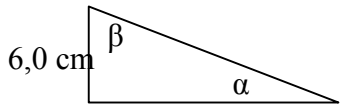
a)



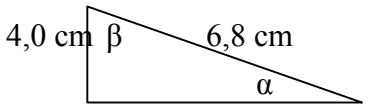
b)



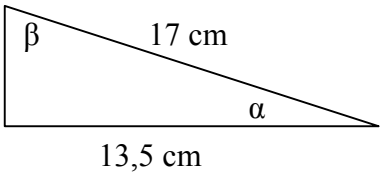
c)



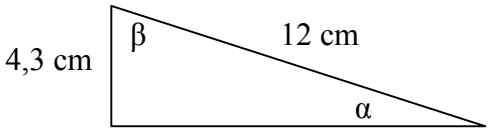
d)



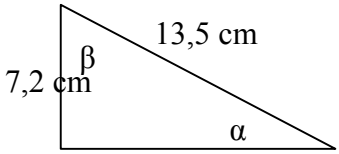
e)



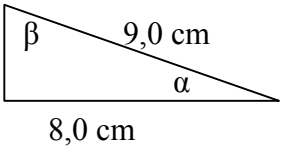
f)



g)



h)



Facit

Uppgift 1:

a)

$$\frac{NK}{HYP} = \cos\alpha$$

$$\frac{NK}{\cos\alpha} = HYP$$

$$HYP = \frac{9}{\cos 27} \approx 10\ cm$$

b)

$$\frac{NK}{HYP} = \cos\alpha$$

$$\frac{NK}{\cos\alpha} = HYP$$

$$HYP = \frac{8}{\cos 36} \approx 9{,}9\ cm$$

c)

$$\frac{NK}{HYP} = \cos\alpha$$

$$\frac{NK}{\cos\alpha} = HYP$$

$$HYP = \frac{10}{\cos 21} \approx 11\ cm$$

d)

$$\frac{NK}{HYP} = \cos\alpha$$

$$\frac{NK}{\cos\alpha} = HYP$$

$$HYP = \frac{22}{\cos 29} \approx 25\ cm$$

e)

$$\frac{MK}{HYP} = \sin\alpha$$

$$\frac{MK}{\sin\alpha} = HYP$$

$$HYP = \frac{7}{\sin 66} \approx 7{,}7\ cm$$

f)

$$\frac{MK}{HYP} = \sin\alpha$$

$$\frac{MK}{\sin\alpha} = HYP$$

$$HYP = \frac{6}{\sin 69} \approx 6{,}4\ cm$$

g)

$$\frac{MK}{HYP} = \sin\alpha$$

$$\frac{MK}{\sin\alpha} = HYP$$

$$HYP = \frac{45}{\sin 59} \approx 52\ cm$$

h)

$$\frac{MK}{HYP} = \sin\alpha$$

$$\frac{MK}{\sin\alpha} = HYP$$

$$HYP = \frac{11}{\sin 77} \approx 11{,}3\ cm$$

Uppgift 2: Beräkna höjden i följande trianglar

a)

$$\frac{MK}{HYP} = \sin\alpha$$

$$MK = HYP \cdot \sin\alpha$$

$$MK = 17 \cdot \sin 27 \approx 7{,}7\ cm$$

b)

$$\frac{MK}{HYP} = \sin\alpha$$

$$MK = HYP \cdot \sin\alpha$$

$$MK = 12 \cdot \sin 36 \approx 7{,}1\ cm$$

c)

$$\frac{NK}{HYP} = \cos\alpha$$

$$NK = HYP \cdot \cos\alpha$$

$$NK = 13{,}5 \cdot \cos 66 \approx 5{,}49\ cm$$

d)

$$\frac{NK}{HYP} = \cos\alpha$$

$$NK = HYP \cdot \cos\alpha$$

$$NK = 9 \cdot \cos 69 \approx 3{,}2\ cm$$

e)

$$\frac{MK}{NK} = \tan\alpha$$

$$MK = NK \cdot \tan\alpha$$

$$NK = 17 \cdot \tan 22 \approx 6{,}9\ cm$$

f)

$$\frac{MK}{NK} = \tan\alpha$$

$$MK = NK \cdot \tan\alpha$$

$$NK = 12 \cdot \tan 33 \approx 7{,}8\ cm$$

g)

$$\frac{MK}{NK} = \tan\alpha$$

$$NK = \frac{MK}{\tan\alpha}$$

$$NK = \frac{13{,}5}{\tan 61} \approx 7{,}5\ cm$$

h)

$$\frac{MK}{NK} = \tan\alpha$$

$$NK = \frac{MK}{\tan\alpha}$$

$$NK = \frac{9}{\tan 62} \approx 4{,}8\ cm$$

Uppgift 3:

a)

$$\frac{MK}{NK} = \tan\alpha$$

$$NK = \frac{MK}{\tan\alpha}$$

$$NK = \frac{5}{\tan 27} \approx 41\ cm$$

b)

$$\frac{MK}{NK} = \tan\alpha$$

$$NK = \frac{MK}{\tan\alpha}$$

$$NK = \frac{7}{\tan 36} \approx 9{,}6\ cm$$

c)

$$\frac{MK}{NK} = \tan\alpha$$

$$MK = NK \cdot \tan\alpha$$

$$NK = 6 \cdot \tan 66 \approx 13\ cm$$

d)

$$\frac{MK}{NK} = \tan\alpha$$

$$MK = NK \cdot \tan\alpha$$

$$NK = 4 \cdot \tan 69 \approx 10\ cm$$

e)

$$\frac{NK}{HYP} = \cos\alpha$$

$$NK = HYP \cdot \cos\alpha$$

$$NK = 17 \cdot \cos 27 \approx 15\ cm$$

f)

$$\frac{NK}{HYP} = \cos\alpha$$

$$NK = HYP \cdot \cos\alpha$$

$$NK = 12 \cdot \cos 36 \approx 9{,}7\ cm$$

g)

$$\frac{MK}{HYP} = \sin\alpha$$

$$MK = HYP \cdot \sin\alpha$$

$$MK = 13{,}5 \cdot \sin 66 \approx 12\ cm$$

h)

$$\frac{MK}{HYP} = \sin\alpha$$

$$MK = HYP \cdot \sin\alpha$$

$$MK = 9 \cdot \sin 69 \approx 8{,}4\ cm$$

Uppgift 4:

a)

$$\frac{MK}{NK} = \tan\alpha$$

$$\frac{5}{11} = \tan\alpha$$

$$\alpha = \arctan(\frac{5}{11}) \approx 24°$$

a)

$$\frac{MK}{NK} = \tan\beta$$

$$\frac{11}{5} = \tan\beta$$

$$\beta = \arctan(\frac{11}{5}) \approx 66°$$

b)

$$\frac{MK}{NK} = \tan\alpha$$

$$\frac{7}{13} = \tan\alpha$$

$$\alpha = \arctan(\frac{7}{13}) \approx 28°$$

b)

$$\frac{MK}{NK} = \tan\beta$$

$$\frac{13}{7} = \tan\beta$$

$$\beta = \arctan(\frac{13}{7}) \approx 62°$$

c)

c)

$$\frac{MK}{NK} = \tan\alpha$$
$$\frac{6}{9} = \tan\alpha$$
$$\alpha = \arctan(\frac{6}{9}) \approx 34°$$

$$\frac{MK}{NK} = \tan\beta$$
$$\frac{9}{6} = \tan\beta$$
$$\beta = \arctan(\frac{9}{6}) \approx 56°$$

d)

$$\frac{MK}{HYP} = \sin\alpha$$
$$\frac{4}{6{,}8} = \sin\alpha$$
$$\alpha = \arcsin(\frac{4}{6{,}8}) \approx 36°$$

d)

$$\frac{NK}{HYP} = \cos\beta$$
$$\frac{4}{6{,}8} = \cos\beta$$
$$\beta = \arccos(\frac{4}{6{,}8}) \approx 54°$$

e)

$$\frac{MK}{HYP} = \sin\beta$$
$$\frac{13{,}5}{17} = \sin\beta$$
$$\beta = \arcsin(\frac{13{,}5}{17}) \approx 53°$$

e)

$$\frac{NK}{HYP} = \cos\alpha$$
$$\frac{13{,}5}{17} = \cos\alpha$$
$$\alpha = \arccos(\frac{13{,}5}{17}) \approx 37°$$

f)

$$\frac{MK}{HYP} = \sin\alpha$$
$$\frac{4{,}3}{12} = \sin\alpha$$
$$\alpha = \arcsin(\frac{4{,}3}{12}) \approx 21°$$

f)

$$\frac{NK}{HYP} = \cos\beta$$
$$\frac{4{,}3}{12} = \cos\beta$$
$$\beta = \arccos(\frac{4{,}3}{12}) \approx 69°$$

g)

$$\frac{MK}{HYP} = \sin\alpha$$
$$\frac{7{,}2}{13{,}5} = \sin\alpha$$
$$\alpha = \arcsin(\frac{7{,}2}{13{,}5}) \approx 32°$$

g)

$$\frac{NK}{HYP} = \cos\beta$$
$$\frac{7{,}2}{13{,}5} = \cos\beta$$
$$\beta = \arccos(\frac{7{,}2}{13{,}5}) \approx 58°$$

h)

$$\frac{MK}{HYP} = \sin\beta$$
$$\frac{8}{9} = \sin\beta$$
$$\beta = \arcsin(\frac{8}{9}) \approx 63°$$

h)

$$\frac{NK}{HYP} = \cos\alpha$$
$$\frac{8}{9} = \cos\alpha$$
$$\alpha = \arccos(\frac{8}{9}) \approx 27°$$