

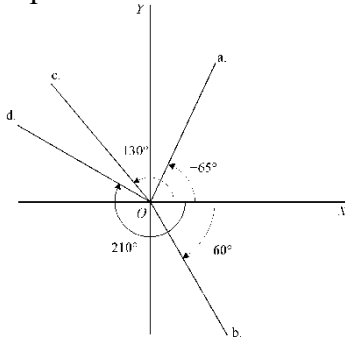
# Antwoorden

Opdracht 23.1

X-as: (1, 0) en (-1, 0)

Y-as: (0, 1) en (0, -1)

Opdracht 23.2



Opdracht 23.3

a.  $50^\circ$ b.  $330^\circ$ c.  $130^\circ$ d.  $200^\circ$ 

Opdracht 23.4

a. -7, -2, 3, 8, 13

b. -12, -7, -2, 3, 8

c. -8, -5, -2, 1, 4

d. -4, -1, 2, 5, 8

Opdracht 23.5

a.  $2 + k \cdot 4 \quad (k \in \mathbb{Z})$ b.  $1 + k \cdot 4 \quad (k \in \mathbb{Z})$ c.  $2 + k \cdot 5 \quad (k \in \mathbb{Z})$ 

Opdracht 23.6

4, 9, 14, 19

Opdracht 23.7

a. (0,1) ; (-1, 0); (0, -1)

b. (zie bladzijde .....)

Opdracht 23.9

(zie bladzijde .....)

Opdracht 23.10

a.  $37^\circ + k \cdot 360^\circ$ ,  
 $143^\circ + k \cdot 360^\circ$ b.  $-17^\circ + k \cdot 360^\circ$ ,  
 $197^\circ + k \cdot 360^\circ$ c.  $\emptyset$ 

Opdracht 23.11

a.  $46^\circ + k \cdot 360^\circ$ ,  
 $-46^\circ + k \cdot 360^\circ$ b.  $102^\circ + k \cdot 360^\circ$ ,  
 $-102^\circ + k \cdot 360^\circ$ c.  $\emptyset$ 

Opdracht 23.12

a.  $72^\circ + k \cdot 180^\circ$ b.  $-27^\circ + k \cdot 180^\circ$ 

Opdracht 23.13

a.  $40,1^\circ$ b.  $120,3^\circ$ 

c. 2,8 rad

d. 1,3 rad

Opdracht 23.14

a.  $\frac{1}{3} \pi$  radb.  $\frac{5}{6} \pi$  radc.  $120^\circ$ d.  $315^\circ$ 

Opdracht 23.15

(zie bladzijde .....)

Opdracht 23.16

a.  $0,745 \pi$  radb.  $0,344 \pi$  rad

c. 0,735 rad

d. 5,81 rad

Opdracht 23.17

a. 1 rad

b. 5 rad

c. 3750 rad

Opdracht 23.18

a.  $2\pi$  rad

b. 79,58 omwenteling

| $\alpha$ (°)  | 0° | 1 <sup>e</sup> kwadrant<br>$0^\circ < \alpha < 90^\circ$ | 90°  | 2 <sup>e</sup> kwadrant<br>$90^\circ < \alpha < 180^\circ$ | 180° | 3 <sup>e</sup> kwadrant<br>$180^\circ < \alpha < 270^\circ$ | 270° | 4 <sup>e</sup> kwadrant<br>$270^\circ < \alpha < 360^\circ$ | 360° |
|---------------|----|----------------------------------------------------------|------|------------------------------------------------------------|------|-------------------------------------------------------------|------|-------------------------------------------------------------|------|
| $\sin \alpha$ | 0  | +                                                        | 1    | +                                                          | 0    | –                                                           | –1   | –                                                           | 0    |
| $\cos \alpha$ | 1  | +                                                        | 0    | –                                                          | –1   | –                                                           | 0    | +                                                           | 1    |
| $\tan \alpha$ | 0  | +                                                        | b.n. | –                                                          | 0    | +                                                           | b.n. | –                                                           | 0    |

Tabel 24.1 (b.n. wil  
zeggen bestaat niet)

| $\alpha$ (°)   | 0° | 30°                   | 45°                   | 60°                   | 90°              | 120°                  | 135°                   | 150°                   | 180°  | 210°                   | 225°                   | 240°                   | 270°              | 300°                   | 315°                   | 330°                   | 360°   |
|----------------|----|-----------------------|-----------------------|-----------------------|------------------|-----------------------|------------------------|------------------------|-------|------------------------|------------------------|------------------------|-------------------|------------------------|------------------------|------------------------|--------|
| $\alpha$ (rad) | 0  | $\frac{1}{6}\pi$      | $\frac{1}{4}\pi$      | $\frac{1}{3}\pi$      | $\frac{1}{2}\pi$ | $\frac{2}{3}\pi$      | $\frac{3}{4}\pi$       | $\frac{5}{6}\pi$       | $\pi$ | $1\frac{1}{6}\pi$      | $1\frac{1}{4}\pi$      | $1\frac{1}{3}\pi$      | $1\frac{1}{2}\pi$ | $1\frac{2}{3}\pi$      | $1\frac{3}{4}\pi$      | $1\frac{5}{6}\pi$      | $2\pi$ |
| $\sin \alpha$  | 0  | $\frac{1}{2}$         | $\frac{1}{2}\sqrt{2}$ | $\frac{1}{2}\sqrt{3}$ | 1                | $\frac{1}{2}\sqrt{3}$ | $\frac{1}{2}\sqrt{2}$  | $\frac{1}{2}$          | 0     | $-\frac{1}{2}$         | $-\frac{1}{2}\sqrt{2}$ | $-\frac{1}{2}\sqrt{3}$ | –1                | $-\frac{1}{2}\sqrt{3}$ | $-\frac{1}{2}\sqrt{2}$ | $-\frac{1}{2}$         | 0      |
| $\cos \alpha$  | 1  | $\frac{1}{2}\sqrt{3}$ | $\frac{1}{2}\sqrt{2}$ | $\frac{1}{2}$         | 0                | $-\frac{1}{2}$        | $-\frac{1}{2}\sqrt{2}$ | $-\frac{1}{2}\sqrt{3}$ | –1    | $-\frac{1}{2}\sqrt{3}$ | $-\frac{1}{2}\sqrt{2}$ | $-\frac{1}{2}$         | 0                 | $\frac{1}{2}$          | $\frac{1}{2}\sqrt{2}$  | $\frac{1}{2}\sqrt{3}$  | 1      |
| $\tan \alpha$  | 0  | $\frac{1}{3}\sqrt{3}$ | 1                     | $\sqrt{3}$            | b.n.             | $-\sqrt{3}$           | –1                     | $-\frac{1}{3}\sqrt{3}$ | 0     | $\frac{1}{3}\sqrt{3}$  | 1                      | $\sqrt{3}$             | b.n.              | $-\sqrt{3}$            | –1                     | $-\frac{1}{3}\sqrt{3}$ | 0      |

Tabel 24.2