

## 8.6 Diagnostische toets

### Opgave 1:

$$A(\cos 40^\circ, \sin 40^\circ) = (0,77; 0,64)$$

$$B(\cos 160^\circ, \sin 160^\circ) = (-0,94; 0,34)$$

$$C(\cos 280^\circ, \sin 280^\circ) = (0,17; -0,98)$$

### Opgave 2:

a.  $\sin \alpha = 0,9$

$$\alpha = 64^\circ \text{ geeft de GR}$$

$$\text{dus } \alpha = 180^\circ - 64^\circ = 116^\circ$$

b.  $\cos \beta = 0,9$

$$\beta = 26^\circ \text{ geeft de GR}$$

$$\text{dus } \beta = -26^\circ$$

$$\angle AOB = 116^\circ - (-26^\circ) = 142^\circ$$

### Opgave 3:

a.  $P(\cos 10, \sin 10) = (-0,84; -0,54)$

b.  $P(\cos 5\frac{1}{2}\pi, \sin 5\frac{1}{2}\pi) = (0, -1)$

### Opgave 4:

a.  $\frac{3}{4}\pi \text{ rad} = \frac{3}{4} \cdot 180 = 135^\circ$

b.  $\frac{1}{5}\pi \text{ rad} = \frac{1}{5} \cdot 180 = 36^\circ$

c.  $0,6 \text{ rad} = \frac{0,6}{\pi} \cdot 180 = 34,4^\circ$

d.  $26\pi \text{ rad} = 26 \cdot 180 = 4680^\circ$

e.  $\frac{2}{3}\pi \text{ rad} = \frac{2}{3} \cdot 180 = 120^\circ$

f.  $\frac{2}{3} \text{ rad} = \frac{2}{\pi} \cdot 180 = 38,2^\circ$

### Opgave 5:

a.  $270^\circ = \frac{270}{180} \cdot \pi = 1\frac{1}{2}\pi \text{ rad}$

b.  $-60^\circ = \frac{-60}{180} \cdot \pi = -\frac{1}{3}\pi \text{ rad}$

c.  $150^\circ = \frac{150}{180} \cdot \pi = \frac{5}{6}\pi \text{ rad}$

d.  $330^\circ = \frac{330}{180} \cdot \pi = 1\frac{5}{6}\pi \text{ rad}$

e.  $40^\circ = \frac{40}{180} \cdot \pi = \frac{2}{9}\pi \text{ rad}$

f.  $-70^\circ = \frac{-70}{180} \cdot \pi = -\frac{7}{18}\pi \text{ rad}$

### Opgave 6:

a.  $\alpha = 0,82$

b.  $\alpha = 0,54$

c.  $\alpha = 0,79$

### Opgave 7:

a.  $y = \sin x \xrightarrow{V_{x-as,3}} y = 3 \sin x \xrightarrow{T(\frac{1}{2}\pi, 2)} y = 2 + 3 \sin(x - \frac{1}{2}\pi)$

$$b. \quad y = \sin x \xrightarrow{V_{y-as, \frac{1}{2}}} y = \sin 2x \xrightarrow{T(\frac{1}{4}, -3)} y = -3 + \sin 2(x - \frac{1}{4})$$

### Opgave 8:

$$y = \cos x \xrightarrow{T(\frac{3}{4}\pi, 1)} y = 1 + \cos(x - \frac{3}{4}\pi) \xrightarrow{V_{y-as, 4}} y = 1 + \cos(\frac{1}{4}x - \frac{3}{4}\pi) \xrightarrow{V_{x-as, 2}} y = 2 - 2\cos(\frac{1}{4}x - \frac{3}{4}\pi)$$

### Opgave 9:

- a. ev.as: 4  
amp: 2  
per:  $\frac{2\pi}{\pi} = 2$   
bp: (1,4)

b.  $y_1 = 4 + 2\sin \pi(x - 1)$

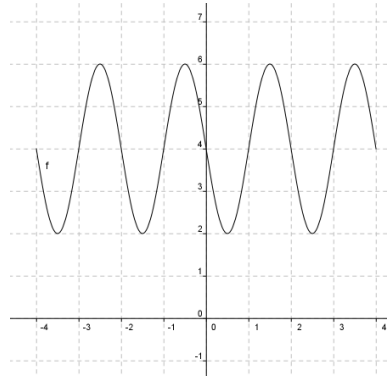
$$y_2 = 5$$

intersect geeft:

$$x = -2,83 \vee x = -2,17 \vee x = -0,83 \vee x = -0,17 \vee x = 1,17 \vee x = 1,83 \vee x = 3,17 \vee x = 3,83$$

$$-2,83 < x < -2,17 \vee -0,83 < x < -0,17 \vee 1,17 < x < 1,83 \vee 3,17 < x < 3,83$$

c.  $\left[\frac{dy}{dx}\right]_{x=1} = 6,28$



### Opgave 10:

- a. ev.as: -10  
amp: 20  
per: 30 dus  $c = \frac{2\pi}{30} = \frac{1}{15}\pi$   
bp: (10, -10)

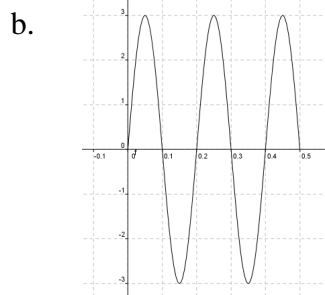
$$f(x) = -10 + 20\sin \frac{1}{15}\pi(x - 10)$$

- b. bp:  $x = 17,5$

$$f(x) = -10 + 20\cos \frac{1}{15}\pi(x - 17,5)$$

### Opgave 11:

- a. amp: 3  
trillingstijd:  $\frac{2\pi}{10\pi} = \frac{1}{5}$   
freq:  $\frac{1}{\frac{1}{5}} = 5$



c.  $\frac{1}{5} \cdot \frac{1}{5} = \frac{1}{25}$   
 $u_Q = 3\sin 10\pi(t - \frac{1}{25})$

**Opgave 12:**

- a.  $AB = \sqrt{100^2 + 21^2} = 102,2$   
 $omtrek = 2\pi \cdot r = 2\pi \cdot 0,25 = 0,5\pi = 1,57$   
 $\frac{102,2}{1,57} = 65$  omwentelingen
- b. per: 2 sec  
dus  $65 \cdot 2 = 130$  sec
- c.  $\frac{102,2}{130} = 0,786 \frac{m}{s} = 2,83 \frac{km}{uur}$