

Uitwerkingen Vwo wis B

SE-1

1a)

$$\frac{1}{15} \cdot \left[1 \begin{pmatrix} 1 \\ 1\frac{1}{2} \end{pmatrix} + 2 \begin{pmatrix} 3 \\ 2\frac{1}{2} \end{pmatrix} + 3 \begin{pmatrix} 4 \\ 3 \end{pmatrix} + 4 \begin{pmatrix} 1\frac{1}{2} \\ 3\frac{1}{2} \end{pmatrix} + 5 \begin{pmatrix} 4 \\ 1 \end{pmatrix} \right] = \begin{pmatrix} 3 \\ 2\frac{3}{10} \end{pmatrix} \quad (4p)$$

b Snijpunt k&l: $\begin{pmatrix} 2\frac{2}{3} \\ 2\frac{1}{3} \end{pmatrix}$ (laat zien).

$$\text{Dan moet gelden: } \frac{1}{15} \left[1 \begin{pmatrix} x \\ \frac{1}{2}x+1 \end{pmatrix} + \begin{pmatrix} 44 \\ 33 \end{pmatrix} \right] = \begin{pmatrix} 2\frac{2}{3} \\ 2\frac{1}{3} \end{pmatrix}$$

los op: $x = -4$, dus kan niet, want $(5p)$

$$\text{dan: } y = \frac{1}{15} [(-2+1) + 33] \neq 2\frac{1}{3}$$

$$2a \quad \frac{3}{2} = \frac{p}{p-3} = \frac{2p}{q} \quad p=g \quad q=12 \text{ (laat zien!)} \quad (3p)$$

$$b \quad \begin{cases} 3x + py = 2p \\ 2x + (p-3)y = q \end{cases} \quad \left\{ \begin{array}{l} \text{met } (x,y) \\ = (2, -4) \end{array} \right. \quad \begin{cases} 6 - 4p = 2p \\ 4 - 4(p-3) = q \end{cases} \quad (2p)$$

geeft $p=1, q=12$

$$c \quad \begin{cases} 3x + 2y = 2p \\ 2x - y = q \end{cases} \quad \cos \alpha = \frac{\begin{pmatrix} 3 \\ 2 \end{pmatrix} \cdot \begin{pmatrix} 2 \\ -1 \end{pmatrix}}{\sqrt{13} \sqrt{5}} = \frac{4}{\sqrt{65}} \quad \alpha = 60,3^\circ \quad (5p)$$

$$d \quad \cos 30^\circ = \frac{1}{2} \sqrt{3} = \frac{\begin{pmatrix} 3 \\ p \end{pmatrix} \cdot \begin{pmatrix} 2 \\ -5 \end{pmatrix}}{\sqrt{9+p^2} \sqrt{29}} \quad \text{los op: } p = -2,36 \quad (5p)$$

3 a $x(t) = \frac{1}{3}t^3 - 3t$ $x'(t) = t^2 - 3$
 $y(t) = 2t^2 - 8$ $y'(t) = 4t$

$\frac{dx}{dt} = 0$ $t = \pm\sqrt{3}$ geeft $(-2\sqrt{3}, -2)$ 3p
 en $(2\sqrt{3}, -2)$

b $y=0 \Rightarrow t=-2$ $x'(2) = 1$ $v(2) = \sqrt{65}$ 3p
 $y'(2) = -8$
 dan $\begin{cases} x(2) > 0 \\ y(2) = 0 \end{cases}$

c los op $0 = \frac{1}{3}t^3 - 3t$ $t=0$ of $t=-3$ of $t=3$
 $y(-3) = y(3) = 10$ dus baan snijdt zichzelf.

$\vec{v}(3) = \begin{pmatrix} 6 \\ 12 \end{pmatrix} \hat{=} \begin{pmatrix} 1 \\ 2 \end{pmatrix}$ $\left\{ \begin{array}{l} \cos \alpha = \frac{\begin{pmatrix} 1 \\ 2 \end{pmatrix} \cdot \begin{pmatrix} 1 \\ -2 \end{pmatrix}}{\sqrt{5} \cdot \sqrt{5}} = \frac{-3}{5} \quad \text{6p} \\ \vec{v}(-3) = \begin{pmatrix} 6 \\ -12 \end{pmatrix} \hat{=} \begin{pmatrix} 1 \\ -2 \end{pmatrix} \end{array} \right.$
 $\alpha = 126,9^\circ$ of $53,1^\circ$

4. a $r_1 = \sqrt{\frac{5}{4}}$ $r_1 + r_2 = \sqrt{20}$ (lat zien!) 3p

$r_2 = \sqrt{\frac{45}{4}} = \sqrt{4^2 + 2^2}$

b lijn door M en N: $y = \frac{1}{2}x + 2$

combineer $\begin{cases} x^2 + (y-1)^2 = 1\frac{1}{4} \\ y = \frac{1}{2}x + 1 \end{cases}$ geeft $x=1$
 $y = 1\frac{1}{2}$

gevraagde lijn $\perp$ op $y = \frac{1}{2}x + 2$, geeft 5p

$y = -2x + b$ door $(1, 1\frac{1}{2})$

$y = -2x + 3\frac{1}{2}$