

## Een verzameling functies

$$6. \quad 1 + \left(\frac{1}{2}\right)^2 + \cos\left(\frac{n\pi}{6}\right) = \frac{1}{4} \quad \rightarrow \quad \cos\left(\frac{n\pi}{6}\right) = -1$$

$$\frac{n\pi}{6} = \pi + 2k \cdot \pi \quad \rightarrow \quad n = 6 \cdot (1 + 2k)$$

$$k = 0 \quad \rightarrow \quad n = 6$$

$$k = 1 \quad \rightarrow \quad n = 18$$

$$k = 2 \quad \rightarrow \quad n = 30$$

$$k = 3 \quad \rightarrow \quad n = 42$$

$$7. \quad f_4(x) = 1 + \sin^2 x + \cos(4x) = 1 + \left(\frac{1}{2} - \frac{1}{2}\cos(2x)\right) + \cos(4x) \\ = \frac{1}{2} - \frac{1}{2}\cos(2x) + \cos(4x)$$

$$8. \quad A_{OABC} = 2\pi \cdot 3 = 6\pi$$

$$\int_0^{2\pi} f_4(x) dx = \int_0^{2\pi} \left(\frac{1}{2} - \frac{1}{2}\cos(2x) + \cos(4x)\right) dx = \left[\frac{1}{2}x - \frac{1}{4}\sin(2x) + \frac{1}{4}\sin(4x)\right]_0^{2\pi} = 3\pi = \frac{1}{2} \cdot A_{OABC}$$