

Oefening limieten 2

ANTWOORDEN

$$1. \lim_{n \rightarrow \infty} n \cdot \sin\left(\frac{1}{n}\right) = \lim_{n \rightarrow \infty} \frac{\sin\left(\frac{1}{n}\right)}{\frac{1}{n}} = \lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$$

$$2. \lim_{n \rightarrow \infty} \frac{3 \cos^2 n}{\sqrt{n}} = 0 \text{ met insluitstelling } \frac{-3}{\sqrt{n}} \leq \frac{3 \cos^2 n}{\sqrt{n}} \leq \frac{3}{\sqrt{n}}$$

$$3. \lim_{n \rightarrow \infty} (\sqrt{2n+5} - \sqrt{2n-3}) = \lim_{n \rightarrow \infty} \frac{2n+5 - 2n+3}{\sqrt{2n+5} + \sqrt{2n-3}} = 0$$

$$4. \lim_{n \rightarrow \infty} (-2)^n = k.n.$$

$$5. \lim_{n \rightarrow \infty} \frac{(-1)^n}{n} = 0 \text{ met insluitstelling } \frac{-1}{n} \leq \frac{(-1)^n}{n} \leq \frac{1}{n}$$

$$6. \lim_{n \rightarrow \infty} \frac{n^2 + 7}{n^3} = \lim_{n \rightarrow \infty} \frac{\frac{1}{n} + \frac{7}{n^3}}{1} = 0 \quad 7. \lim_{n \rightarrow \infty} \frac{n^4 - 4}{n^3} = \lim_{n \rightarrow \infty} n - \frac{4}{n^3} = \infty$$

$$8. \lim_{n \rightarrow \infty} \sqrt{\frac{2n+2}{n-3}} = \lim_{n \rightarrow \infty} \sqrt{\frac{2 + \frac{2}{n}}{1 - \frac{3}{n}}} = \sqrt{2}$$

$$9. \lim_{n \rightarrow \infty} \frac{2n+1}{\sqrt{n^2 + n - 3}} = \lim_{n \rightarrow \infty} \frac{2 + \frac{1}{n}}{\sqrt{1 + \frac{1}{n} - \frac{3}{n^2}}} = 2$$

$$10. \lim_{n \rightarrow \infty} \frac{2-5n}{\sqrt{n^2 - 1}} = \lim_{n \rightarrow \infty} \frac{\frac{2}{n} - 5}{\sqrt{1 - \frac{1}{n^2}}} = -5$$