

Oefening limieten 1

ANTWOORDEN

$$1. \lim_{n \rightarrow \infty} \frac{3n-5}{n} = \lim_{n \rightarrow \infty} \frac{3 - \frac{5}{n}}{1} = 3$$

$$2. \lim_{n \rightarrow \infty} \frac{2^{1-n}}{n} = \lim_{n \rightarrow \infty} \frac{2^1 \cdot 2^{-n}}{n} = \lim_{n \rightarrow \infty} \frac{2^1}{n \cdot 2^n} = 0$$

$$3. \lim_{n \rightarrow \infty} \frac{5 \cos n}{n} = 0 \quad \text{met insluitstelling: } \frac{-5}{n} \leq \frac{5 \cos n}{n} \leq \frac{5}{n}$$

$$4. \lim_{n \rightarrow \infty} \frac{1-2n}{3n} = \lim_{n \rightarrow \infty} \frac{\frac{1}{n} - 2}{3} = -\frac{2}{3}$$

$$5. \lim_{n \rightarrow \infty} \frac{5n^2 - 3n + 7}{2n^2 + 1} = \lim_{n \rightarrow \infty} \frac{5 - \frac{3}{n} + \frac{7}{n^2}}{2 + \frac{1}{n^2}} = \frac{5}{2}$$

$$6. \lim_{n \rightarrow \infty} (\sqrt{n+3} - \sqrt{n}) = \lim_{n \rightarrow \infty} \frac{n+3-n}{\sqrt{n+3} + \sqrt{n}} = 0$$

$$7. \lim_{n \rightarrow \infty} \frac{\sin n}{n} = 0 \quad \text{met insluitstelling: } \frac{-1}{n} \leq \frac{\sin n}{n} \leq \frac{1}{n}$$

$$8. \lim_{n \rightarrow \infty} \frac{n^2+1}{n} = \lim_{n \rightarrow \infty} \frac{n + \frac{1}{n}}{1} = \infty \quad 9. \lim_{n \rightarrow \infty} 6 \cdot \left(\frac{2}{7}\right)^n = 0$$

$$10. \lim_{n \rightarrow \infty} \frac{3n-5}{2n+9} = \lim_{n \rightarrow \infty} \frac{3 - \frac{5}{n}}{2 + \frac{9}{n}} = \frac{3}{2}$$