

Limieten van functies & Continuïteit

Virga Jessecollege

Toets WISKUNDE

Hasselt

leerkracht: Karel Appeltans

Datum:

schooljaar.....

Klas: V

Afdeling:

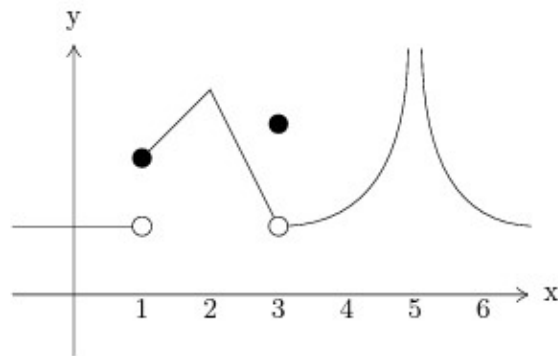
Naam:.....

Aantal uren wiskunde: 6

1	$\lim_{x \rightarrow 2} \frac{x^2 - 4}{\sqrt{x^2 + 5} - 3}$
2	a $\lim_{x \rightarrow 3} \frac{\sqrt{x+1} - 2}{x^2 - 9}$
3	$\lim_{x \rightarrow 2} \frac{x^2 - 4}{2 - \sqrt{x+2}}$
4	Bespreek de continuïteit van $f(x) = \lceil \sin(x) \rceil$ in het interval $[0, 2\pi]$ (deze haakjes betekenen naar boven afronden)
5	3. (4 points) Let $f(x) = \begin{cases} \frac{1}{k+1-x} & \text{if } x \leq 3, \\ \sqrt{\frac{x^2 - 5x + 6}{k(x-3)}} & \text{if } x > 3. \end{cases}$ Find all values of k that make the function $f(x)$ continuous at $x = 3$.
6	Toon aan dat $f(x) = \log_2(x) + x - 2$ minstens een nulpunt heeft in het interval $[1, 2]$
7	Find all value(s) of c which make the function $f(x) = \begin{cases} (2x - c)^2, & \text{if } x \leq 1, \\ 3x - c, & \text{if } x > 1 \end{cases}$ continuous.
8	$\lim_{x \rightarrow 4} \frac{4 - x}{5 - \sqrt{x^2 + 9}}$
9	Show that $t^3 + \sin t = \frac{1}{t^2 + 1}$ has at least one solution. If you use a theorem, state this and explain how you used it.

19

Problem 2. (10 punten) Below is the graph of $y = f(x)$.



- Find the values of a for which $\lim_{x \rightarrow a^+} f(x)$ is infinite or does not exist.
- Find the values of a for which $\lim_{x \rightarrow a^-} f(x)$ is infinite or does not exist.
- Find the values of a for which $\lim_{x \rightarrow a} f(x)$ is infinite or does not exist.
- Find the values of a for which f is not continuous at $x = a$.

20

Bekijk de functie $h(x)$. Is deze functie continu in $x = -2$? Toon je berekening aan.

$$h(x) = \frac{|x + 2|}{x^2 + 5x + 6}$$

21

$$\lim_{x \rightarrow 2} \frac{x^2 - 4}{\sqrt{x} - \sqrt{4 - x}}$$

22

$$\lim_{x \rightarrow 9} \frac{x^2 - 81}{\sqrt{x} - 3}$$

23	11. Find the values of a and b so that the function $f(x) = \begin{cases} \frac{x^2 - x}{x - 1} & \text{if } x < 1 \\ ax^2 + 2x + b & \text{if } 1 \leq x < 2 \\ x + a & \text{if } 2 \leq x. \end{cases}$ is continuous on $(-\infty, \infty)$. A. $a = \frac{1}{2}, b = -2$ B. $a = -\frac{1}{2}, b = -\frac{1}{2}$ C. $a = 2, b = -1$ D. $a = \frac{3}{2}, b = -\frac{1}{4}$ E. No matter how we choose the values for a and b, the function $f(x)$ can never be continuous on $(-\infty, \infty)$.	
24	1. Bepaal de waarde(n) van c zodat de volgende functie continu is $f : [1, 3] \rightarrow \mathbb{R}, f(x) = \begin{cases} \sqrt{c^2 - 2cx + x^2}, & x \in [1, 2] \\ cx + 3, & x \in (2, 3] \end{cases}$	
25	$\lim_{x \rightarrow 3} \frac{\sqrt{x+6} - x}{x^3 - 3x^2}$	A) 0 E) 1/10 B) -5/9 F) 1/6 C) 5/9 G) 1/2 D) -5/54 H) does not exist
26	$\lim_{x \rightarrow 3} \frac{x - 3}{\sqrt{5x + 1} - 4}$	
27	$\lim_{x \rightarrow 1} \frac{1 - \sqrt{8x - 7}}{x - 1} =$	
28		