

Laat

Let

$$f(x) = \frac{2x}{5-x}$$

4.1 Bepaal die moontlike vertikale asymp-
toot van f (motiver)

4.1 Determine the possible vertical
asymptote of f (motivate)

4.2 Bepaal die moontlike horisontale
asymptoot(asimptote) van f (mo-
tiver)

4.2 Determine the possible horizontal
asymptote(s) of f (motivate)

[3]

Sonder berekening mag jy gebruik maak
van die feit dat

Without calculation, you may use the fact
that

$$f'(x) = \frac{10}{(5-x)^2}$$

en / and

$$f''(x) = \frac{20}{(5-x)^3}$$

4.3 Skets die funksie f , en dui alle moont-
like asympote, ekstreme, afsnitte en
buigpunte aan.

4.3 Sketch the function f and indicate
all possible asymptotes, intercepts,
extremes and points of inflection.

[4]

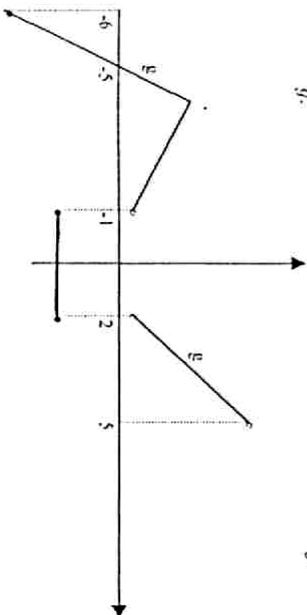
QUESTION 5

$$\text{Laat / Let } f(x) = \begin{cases} \frac{\sin^2 x}{x} & \text{vir/for } x < 0 \\ e^x - 1 & \text{vir/for } x \geq 0 \end{cases}$$

5.1) Stel vas of f kontinu is in die punt $x = 0$.

5.1) Determine whether f is continuous at $x = 0$.

5.2) Beskou die grafiek van 'n funksie g .



5.2) Consider the graph of a function g .

Give the grootste interval(le) waarop g kontinu is.

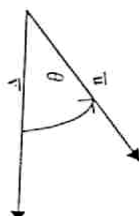
Give the largest interval(s) on which g is continuous.

QUESTION 6

6.1) Laat \vec{u} en \vec{v} twee 3-dimensionele, nie-nul vektore wees en θ die hoek tussen hulle.

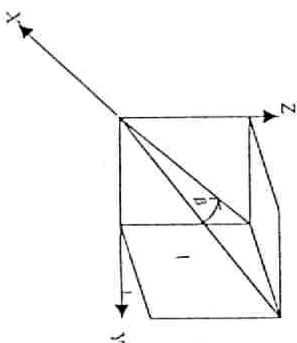
6.1) Let \vec{u} and \vec{v} be two 3-dimensional, non-zero vectors and θ the angle between them.

Bewys dat / Prove that $\cos \theta = \frac{\vec{u} \cdot \vec{v}}{\|\vec{u}\| \|\vec{v}\|}$.



6.2) Gegee 'n kubus met sy lengtes almal 1 eenheid. Vind die hoek β tussen die kubus se diagonaal en die diagonaal van 'n sy (kant).

2) Given a cube which measures one unit along each edge. Find the angle β between the cube's diagonal and the diagonal of one of its sides.



VRAAG 2

Bereken de volgende limieten indien
hulle bestaan:

$$2.1 \lim_{x \rightarrow 1} \frac{1-x^4}{1-x}$$

QUESTION 2

Compute the following limits if they
exist:

$$2.2 \lim_{x \rightarrow -1} \frac{2x+2}{|x+1|}$$

[2]

[3]

VRAAG 3

Bereken die funksie

$$f(x) = \begin{cases} (x-2)^2 & \text{as } x \geq 2 \\ 0 & \text{as } x < 2 \end{cases}$$

Stel vas of f differensieerbaar by $x = 2$
is. (Verduidelik)

QUESTION 3

Consider the function

$$f(x) = \begin{cases} (x-2)^2 & \text{as } x \geq 2 \\ 0 & \text{as } x < 2 \end{cases}$$

Determine whether f is differentiable
at $x = 2$. (Explain)

[3]