

# Eindexamen wiskunde B1 vwo 2005-II

## Reistijd

$$7. \quad v_{A \rightarrow B} = 20 + v \quad \rightarrow \quad t_{\text{heen}} = \frac{10}{20 + v}$$

$$v_{B \rightarrow A} = 20 - v \quad \rightarrow \quad t_{\text{terug}} = \frac{10}{20 - v}$$

$$t_{\text{totaal}} = t_{\text{heen}} + t_{\text{terug}} = \frac{10}{20 + v} + \frac{10}{20 - v}$$

$$8. \quad y_1 = \frac{10}{20 + x} + \frac{10}{20 - x} \quad y_2 = 2$$

intersect  $x = 14,14 \rightarrow v = 14,14 \text{ km/uur}$

$$9. \quad T' = 10 \cdot (-1) \cdot (20 + v)^{-2} + 10 \cdot (-1) \cdot (20 - v)^{-2} \cdot (-1) = \frac{-10}{(20 + v)^2} + \frac{10}{(20 - v)^2}$$

$$T' = \frac{-10 \cdot (20 - v)^2 + 10 \cdot (20 + v)^2}{((20 + v) \cdot (20 - v))^2} = \frac{800 \cdot v}{((20 + v) \cdot (20 - v))^2}$$

$$T' = 0: v = 0 \quad T' \quad \begin{array}{c} 0 \text{ ++++++} \\ | \\ 0 \text{ ++++++} \\ \hline 0 \text{ ++++++} \\ | \\ 20 \end{array}$$

$T' > 0$  voor alle  $v$ . ( $v \neq 20$ )

$$10. \quad (T(0) + T(0,1) + T(0,2) + \dots + T(10)) \cdot \frac{1}{101} =$$

$$\frac{1}{101} \cdot \sum_{k=0}^{100} \left( \frac{10}{20 + \frac{k}{10}} \right) + \left( \frac{10}{20 - \frac{k}{10}} \right) = 1,099 \text{ uur} = 66 \text{ minuten.}$$

Met de GR:  $\text{sum}(\text{seq}(10/(20+x/10)+10/(20-x/10), x, 0, 100, 1)) = 111.03$

$$111,03 / 101 = 1,099$$

$$11. \quad \frac{1}{10} \int_0^{10} T(v) dv = \frac{1}{10} [10 \ln(20 + v) - \ln(20 - v)]_0^{10} = \frac{1}{10} (10 \ln(\frac{30}{10}) - 10 \ln(\frac{20}{20})) = \ln 3$$