

Oefening na B1(deel 5) A4

ANTWOORDEN

1. $\frac{dy}{dx} = \frac{2}{e^y} \Rightarrow y' \cdot e^y = 2 \Rightarrow y = \ln(2x + c)$
 Door (1,0) betekent dat $c = -1$ dus oplossing: $y = \ln(2x - 1)$
2. $y' = \frac{3}{y^2} \Rightarrow y^2 \cdot y' = 3 \Rightarrow \frac{1}{3} y^3 = 3x + c \Rightarrow y = \sqrt[3]{9x + k}$
 Door (1,2) betekent dat $k = -1$ dus oplossing: $y = \sqrt[3]{9x - 1}$
3. $y' = 2 + y \Rightarrow \frac{y'}{2 + y} = 1 \Rightarrow \ln(2 + y) = x + c \Rightarrow 2 + y = e^{x+c} \Rightarrow y = e^{x+c} - 2$
4. $\sin 3x = \frac{1}{2} \Rightarrow 3x = \frac{1}{6}\pi \pmod{2\pi}$ of $3x = \frac{5}{6}\pi \pmod{2\pi}$
 $x = \frac{1}{18}\pi \pmod{\frac{2}{3}\pi}$ of $x = \frac{5}{18}\pi \pmod{\frac{2}{3}\pi}$
5. $\cos 2x = \frac{1}{2}\sqrt{3} \Rightarrow 2x = \mp \frac{1}{6}\pi \pmod{2\pi} \Rightarrow x = \mp \frac{1}{12}\pi \pmod{\pi}$
6. $\tan 2x = \sqrt{3} \Rightarrow 2x = \frac{1}{3}\pi \pmod{\pi} \Rightarrow x = \frac{1}{6}\pi \pmod{\frac{1}{2}\pi}$
7. $\tan 3x = -1 \Rightarrow 3x = -\frac{1}{4}\pi \pmod{\pi} \Rightarrow x = -\frac{1}{12}\pi \pmod{\frac{1}{3}\pi}$
8. Benader de helling bij $t=2$ bij $\begin{cases} x = \sin t \\ y = 2 \cdot \cos t \end{cases}$ met rekenapparaat 4,37
9. Benader de helling in $(-1,2)$ bij $\begin{cases} x = \cos 2t \\ y = 2 \cdot \sin t \end{cases}$ met rekenapparaat 0
10. Benader de helling bij $t=3$ bij $\begin{cases} x = \sqrt{2} \cdot \cos t \\ y = 4 \cdot \sin t \end{cases}$ met rekenapparaat 19,842
11. $f(x) = 3 \cdot 5^{2x} \Rightarrow F(x) = 3 \cdot \frac{1}{\ln 5} \cdot \frac{1}{2} \cdot 5^{2x} + c$
12. $g(x) = \frac{x}{x^2 + 2} \Rightarrow g'(x) = \frac{2 - x^2}{(x^2 + 2)^2}$
13. $2\sin 2t - 3\cos t = 0 \Rightarrow 4\sin t \cos t - 3\cos t = 0 \Rightarrow \cos t(4\sin t - 3) = 0$
 $\cos t = 0$ of $\sin t = \frac{3}{4} \Rightarrow t = \frac{1}{2}\pi \pmod{\pi}$ of $t = 0,848 \pmod{2\pi}$ of $t = 2,294 \pmod{2\pi}$
14. Gevraagde oppervlakte = $\int_0^{\ln 5} (5 - e^x) dx = 5 \ln 5 - 4 \approx 4,05$
15. de inhoud = $\int_{-2}^2 \pi(6 - x^2)^2 dx - \int_{-2}^2 \pi \cdot 2^2 dx = 115,2\pi$