Eindexamen wiskunde B1-2 vwo 2002-II

Oppervlakte

1. $f'(x) = \dfrac{1}{2\sqrt{x-1}}$ $\rightarrow$ $f'(10) = \frac{1}{6}$

$y = \frac{1}{6}x + b \ \text{door} \ P(10, 3)$ $\rightarrow$ $b = 3 - \frac{1}{6} \cdot 10 = \frac{4}{3}$

$\rightarrow$ $k: \quad y \rightarrow \frac{1}{6}x + \frac{4}{3}$

2. $\frac{1}{6}x + \frac{4}{3} = 0$ $\rightarrow$ $x = -8$

$A = \displaystyle\int_{-8}^{10}(\tfrac{1}{6}x + \tfrac{4}{3})dx - \int_{1}^{10}(\sqrt{x-1})dx = \left[\dfrac{x^2}{12} + \dfrac{4x}{3}\right]_{-8}^{10} - \left[\tfrac{2}{3}(x-1)^{\frac{3}{2}}\right]_{1}^{10} =$

$= \quad 8\frac{1}{3} + 13\frac{1}{3} - 5\frac{1}{3} + 10\frac{2}{3} - 18 = 9$