

Oppervlaktes

$$15. \quad f'(x) = \frac{1}{2}x = 1 \quad \rightarrow \quad x = 2 \quad \rightarrow \quad (2, 1)$$

$$g'(x) = \frac{8}{x^3} = 1 \quad \rightarrow \quad x = 2 \quad \rightarrow \quad (2, -1)$$

De lengte van de diagonaal is gelijk aan de verticale afstand tussen $(2, 1)$ en $(2, -1)$, dus deze lengte is 2.

$$16. \quad \int_0^a f(x) dx + a \cdot \frac{4}{a^2} = \frac{1}{4}a^2 \cdot a - \int_0^a f(x) dx$$

$$\int_0^a f(x) dx + \frac{4}{a} = \frac{1}{4}a^3 - \int_0^a f(x) dx$$

$$\int_0^a f(x) dx = \frac{1}{2} \left(\frac{1}{4}a^3 - \frac{4}{a} \right) = \frac{1}{12}a^3$$

$$\rightarrow \quad \frac{1}{24}a^3 = \frac{4}{2a} \quad \rightarrow \quad \frac{1}{12}a^4 = 4 \quad \rightarrow \quad a = \sqrt[4]{48} \quad (\text{of } a = 2,63)$$