4.8:2 To positive tall har produkt 8.

Hva er den minste mulige verdien for deres sum?

Løsning:

$$s = x + y, \quad xy = 8, \quad x, y > 0$$

$$s(x) = x + \frac{8}{x}, \quad D(s) = (0, \infty)$$

$$s'(x) = 1 - \frac{8}{x^2}$$

$$0 = 1 - \frac{8}{x^2} \iff x = \sqrt{8} = 2\sqrt{2}$$

$\Rightarrow x_0 = 2\sqrt{2}$ er et kritisk punkt for s

$$s''(x) = \frac{16}{x^3} > 0 \quad \forall x \in D(s)$$

$\Rightarrow x_0$ er et lokalt minimum

$\Rightarrow x_0$ —"— abs —"—

$$s(x_0) = 2\sqrt{2} + \frac{8}{2\sqrt{2}}$$

$$= 4\sqrt{2}$$

$$\frac{8}{2\sqrt{2}} = \frac{4}{\sqrt{2}}$$

$$= 2\frac{2}{\sqrt{2}}$$

$$= 2\frac{\sqrt{2}\sqrt{2}}{\sqrt{2}}$$

$$= 2\sqrt{2}$$