


1.79
3

$$(6x - x^2 - 4) \cdot 2 \log_2 x - \log_2(x+6) > 1 = (6x - x^2 - 4)^0$$

תחום הפתרון:

$$\begin{aligned} x &> 0 \\ x &> -6 \leftarrow x+6 > 0 \\ \pm 3 \pm \sqrt{5} &= \frac{-6 \pm \sqrt{20}}{-2} \leftarrow 6x - x^2 - 4 > 0 \\ +3 - \sqrt{5} &< x < +3 + \sqrt{5} \end{aligned}$$


$3 - \sqrt{5} < x < 3 + \sqrt{5}$: תחום הפתרון

נחזור לאי שיוויון

$$\begin{aligned} (6x - x^2 - 4 - 1)(0 - 2 \log_2 x + \log_2(x+6)) &< 0 \\ (-x^2 + 6x - 5)(\log_2 x^{-2} + \log_2(x+6)) &< 0 \end{aligned}$$

$$\begin{aligned} \downarrow \\ x &= 5 \\ x &= 1 \end{aligned}$$

$$\log_2 \left(\frac{x+6}{x^2} \right) = 0$$

$$\frac{x+6}{x^2} = 1$$

$$x^2 - x - 6 = 0$$

$$\begin{aligned} x &= 3 \\ x &= -2 \end{aligned}$$

$$\begin{array}{c} + \quad \quad \quad + \quad \quad \quad + \\ \hline -2 \quad 1 \quad 3 \quad 5 \end{array}$$

$$\boxed{\begin{aligned} 3 < x < 5 \\ -2 < x < 1 \end{aligned}}$$

חיתוך עם תחום ההגדרה נותן:

$$\boxed{\begin{aligned} 3 < x < 5 \\ 3 - \sqrt{5} < x < 1 \end{aligned}}$$