1.69

תחום הגדרה

$x>1 \leftarrow x-1>0$

$x>-2 \leftarrow x+2>0$

$\log_2(x+2) = m + 2\log_4(x-1)$

$\log_2(x+2) = m + \log_2(x-1)$

$\log_2\left(\frac{x+2}{x-1}\right) = m$

$\frac{x+2}{x-1} = 2^m \rightarrow x+2 = 2^m x - 2^m$

$x(1-2^m) = -2-2^m$

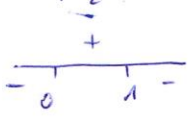
$x = \frac{-2-2^m}{1-2^m}$

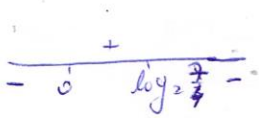
$4 < \frac{-2-2^m}{1-2^m} < 5$

$0 < \frac{-2-2^m-4+4\cdot 2^m}{1-2^m}$ לפי $0 > \frac{-2-2^m-5+5\cdot 2^m}{1-2^m}$

$0 < \frac{-6+3\cdot 2^m}{1-2^m}$ לפי $0 > \frac{-7+4\cdot 2^m}{1-2^m}$

$0 < \frac{3(-2+2^m)}{1-2^m}$ לפי $0 > \frac{-7+4\cdot 2^m}{1-2^m}$



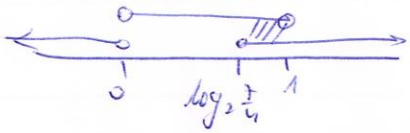


$0 < m < 1$ לפי $m > 0$ או $m < \log_2\frac{7}{4}$

דרישה מהתחום ההגדרה $x>1$

$\frac{-2-2^m}{1-2^m} > 1$ (נכון בהכרח $5 > x > 4$)

סכימה:



$\log_2\frac{7}{4} < m < 1$

$\log_2\frac{7}{4} = \log_2 7 - \log_2 4 = \log_2 7 - 2$

$\boxed{-2+\log_2 7 < m < 1}$