

1. $\frac{x+1}{2}$ $\log_{x+3} 6 + (\log_{3+x} 2) \cdot [\log_{\frac{1}{4}} (4-x)^2] = 1$

$\log_{x+3} 6 + \frac{1}{\log_2 (3+x)} \cdot \log_{2^{-2}} (4-x)^2 = 1$

$\log_{x+3} 6 + \frac{1 \cdot \log 2}{2 \log (3+x)} \cdot \frac{\log (4-x)^2}{\log 2} = 1$

$\log_{x+3} 6 - \frac{1}{2} \log_{3+x} (4-x)^2 = 1$

$\log_{x+3} 6 - \log_{3+x} |4-x| = 1$

$\log_{x+3} \frac{6}{|4-x|} = 1$

Plan 2
 $x < 4$ $\frac{6}{4-x} = x+3 \rightarrow 6 = 12+x-x^2$
 $x^2 - x - 6 = 0$
 $x = 3$

Plan 2
 $x = -2$

$x > 4$ $\frac{6}{4-x} = -x-3$
 $6 = -12-x+x^2$
 $x^2 - x - 18 = 0$

$\frac{1 \pm \sqrt{73}}{2}$ $\frac{1 + \sqrt{73}}{2}$

Plan 1
 $1 \neq 3+x > 0$
 $-2 \neq x > -3$
 $(4-x)^2 \neq 0$
 $x \neq 4$