Solving Logarithmic Functions

1) $\log_3 x + \log_3 (x-24) = 4$

$\log_3 x(x-24) = 4$

$3^4 = x(x-24)$

$81 = x^2 - 24x$

$0 = x^2 - 24x - 81$

$0 = (x-27)(x+3)$

$x = 27$ $\quad x = \cancel{-3}$ extraneous