

$$\begin{aligned}
& \left(\frac{3m}{m-4} - \frac{6m}{m^2-8m+16} \right) : \frac{m-6}{16-m^2} + \frac{24m}{m-4} = \left(\frac{3m}{m-4} - \frac{6m}{(m-4)^2} \right) * \frac{(4-m)(4+m)}{m-6} + \frac{24m}{m-4} \\
& = \frac{3m^2-12m-6m}{(m-4)^2} * \frac{(4-m)(4+m)}{m-6} + \frac{24m}{m-4} = \frac{-3m(m+4)+24m}{m-4} = -\frac{3m(m-4)}{(m-4)} \\
& = -3m
\end{aligned}$$