

Simplify the following rational expression.  $\frac{x+5}{x-4} - \frac{x-3}{x+7} - \frac{5}{x^2+3x-28}$

$$\frac{x+5}{x-4} - \frac{x-3}{x+7} - \frac{5}{x^2+3x-28} = \frac{x+5}{x-4} - \frac{x-3}{x+7} - \frac{5}{(x-4)(x+7)}$$

$$= \frac{x+7}{x+7} \cdot \frac{x+5}{x-4} - \frac{x-4}{x-4} \cdot \frac{x-3}{x+7} - \frac{5}{(x-4)(x+7)}$$

$$= \frac{x^2+12x+35}{(x-4)(x+7)} - \frac{x^2-7x+12}{(x-4)(x+7)} - \frac{5}{(x-4)(x+7)}$$

$$= \frac{14x+18}{(x-4)(x+7)} = \frac{14x+18}{x^2+3x-28}$$