Solve the following rational expressions.

3.

$$\frac{3}{x+2}-\frac{1}{x}=\frac{1}{5x}$$

$\left(\frac{3}{x+2}-\frac{1}{x}=\frac{1}{5x}\right)(5x(x+2))$

$3(5x)-(5(x+2))=1(x+2)$

$15x-5x-10=x+2$

$10x-10=x+2$

$9x=12$

$x=\frac{12}{9}$

$x=\frac{4}{3}$

What is the **least common denominator**? $5x(x+2)$

What are the **excluded values**?

$x=-2$

$x=0$

Solution(s): $x=\frac{4}{3}$

4.

$$\frac{1}{x+3}+\frac{2}{x}=\frac{-3}{x(x+3)}$$

$\left(\frac{1}{x+3}+\frac{2}{x}=\frac{-3}{x(x+3)}\right)(x(x+3))$

$x+2(x+3)=-3$

$x+2x+6=-3$

$3x=-9$

$x=-3$

What is the **least common denominator**? $x(x+3)$

What are the **excluded values**?

$x=0$

$x=-3$

Solution(s): NO SOLUTION

5.

$$\frac{1}{x-6}+\frac{x}{x-2}=\frac{4}{x^2-8x+12}$$

$\left(\frac{1}{x-6}+\frac{x}{x-2}=\frac{4}{(x-2)(x-6)}\right)(x-2)(x-6)$

$1(x-2)+x(x-6)=4$

$x-2+x^2-6x=4$

$x^2-5x-6=0$

$(x-6)(x+1)=0$

$x=6 \quad x=-1$

What is the **least common denominator**? $(x-2)(x-6)$

What are the **excluded values**?

$x=2$

$x=6$

Solution(s): $x=-1$