(12) $$\frac{\frac{12}{x^2-7x-44}}{\frac{2}{x-11}+\frac{1}{x+4}} = \left(\frac{\frac{12}{(x-11)(x+4)}}{\frac{2}{x-11}+\frac{1}{x+4}}\right)\left(\frac{(x-11)(x+4)}{(x-11)(x+4)}\right) = \frac{12}{2(x+4)+1(x-11)}$$

$$= \frac{12}{2x+8+x-11} = \frac{12}{3x-3} \overset{3\cdot 4}{=} \frac{4}{x-1} \quad \text{when } x \neq 11,\ x \neq -4$$

$3(x-1)$

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(13) $$\frac{1}{2x+5} = \frac{x}{11x+20}$$

$$1(11x+20) = x(2x+5)$$

$$11x+20 = 2x^2+5x$$

$-11x \qquad -11x$

$$0 = 2x^2-6x-20$$

$$0 = 2(x^2-3x-10)$$

Quadratic formula

$a=1$, $b=-4$, $c=-10$

$b^2-4ac = 16-4(1)(-10)$

$= 16+40$

$= 56$

$$x = \frac{4 \pm \sqrt{56}}{2} = \frac{4 \pm \sqrt{4\cdot 14}}{2}$$

$$0 = 2(x-5)(x+2)$$

$x = 5$ or $x = -2$ $\qquad x = \frac{4 \pm 2\sqrt{14}}{2} = \boxed{x = 2 \pm \sqrt{14}}$

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(14) $$\frac{12}{x^2-2x} - \frac{3}{x-2} = \frac{3}{x}$$

$x(x-2)$

$$x(x-2)\left(\frac{12}{x(x-2)} - \frac{3}{(x-2)} = \frac{3}{x}\right)x(x-2)$$

$$12 - 3x = 3(x-2)$$

$$12-3x = 3x-6$$

$$18 = 6x$$

$$\boxed{x = 3}$$