19 $\frac{x^2+5x-36}{x^2-49} \cdot (x^2-11x+28) = \frac{(x+9)(x-4)}{(x+7)(x-7)} \cdot (x-7)(x-4) = \frac{(x+9)(x-4)^2}{(x+7)}$ $x \neq 7, -7$

Numerator 1
$x^2+5x-36$
$x \quad 9$
$x \quad -4$
$-4x+9x = 5x$
$(x+9)(x-4)$

Numerator 2
$x^2-11x+28$
$x \quad -7$
$x \quad -4$
$-4(x-7)x = -11x$
$(x-7)(x-4)$

Denominator 1
x^2-49
$(x+7)(x-7)$

21 The polynomials should have been factored first and then cancel.
Factors divided out

$\frac{x^2+16x+48}{x^2+8x+16} = \frac{(x+12)(x+4)}{(x+4)(x+4)} = \frac{x+12}{x+4}$

22 The expression $3-x$ should be factored into $-(x-3)$ before dividing out common factor

$\frac{x^2-25}{3-x} \cdot \frac{x-3}{x+5} \quad \frac{(x+5)(x-5)}{-x+3} \cdot \frac{x-3}{x+5} = \frac{(x+5)(x-5)}{-(x-3)} \cdot \frac{x-3}{x+5} = -x+5 \quad x \neq 3, -5$