Simplify:

D.O.S

a) $\frac{a^2-1}{a+1} = \frac{(a-1)(a+1)}{(a+1)}$

$a+1=0$
$a=-1$ $\quad a \neq -1$

$a-1, a \neq -1$

b) $\frac{2x+10}{1x^2+7x+10}$ mxn, m+n 2,5

$\frac{2(x+5)}{(x+5)(x+2)}$

$(x+5)(x+2)=0$
$x+5=0$ or $x+2=0$
$x=-5$ $\quad x=-2$
$x \neq \{-5,-2\}$

$\frac{2}{x+2}, x \neq \{-5,-2\}$

c) $\dfrac{v^2-7v-30}{v^2-5v-24}$

d) $\dfrac{6m^3+42m^2}{2m^2+26m+84}$

$\dfrac{6m^2(m+7)}{2(m^2+13m+42)}$

$m \times n = 42$, $m+n = 13$ → 6, 7

$\dfrac{6m^2(m+7)}{2(m+7)(m+6)}$

$m+6=0$, $m=-6$

$m+7=0$, $m=-7$

$m \neq \{-7, -6\}$

$\dfrac{3m^2}{m+6}$, $m \neq \{-7, -6\}$

Rational Expressions and Arithmetic

To add, subtract, multiply & divide rational expressions, we are going to use the rules of arithmetic for fractions as well as our methods for factoring and simplifying.

1. Multiplication

Example: $\left(\frac{3a-3b}{a}\right)\left(\frac{a^2}{a-b}\right)$

* factor each polynomial, if possible

$\left(\frac{3(a-b)}{a}\right)\left(\frac{a^2}{a-b}\right)$ $a=0$, $a-b=0$ $\Big\}\ a\neq\{0,b\}$

* state the restrictions, then multiply the expressions (canceling any common factors on top and bottom).