Examples of rational numbers: a) $\frac{3}{5}$ b) $-8=\frac{-8}{1}$ c) $0.13=\frac{13}{100}$

Examples of rational expressions: a)$ \frac{3+x}{5-x}$ b) $\frac{x^{2}-2x}{x^{2}}$ c) $ \frac{3x}{9-x^{2}}$

 d)$ \frac{1}{xy}$ e) $\frac{3x}{x^{2}+4}$ f) $\frac{-2x^{2}}{x^{2}+4x-5}$

**RESTRICTIONS**

Because the denominator cannot equal 0, we must **restrict** values of x so that the denominator does not equal 0.

Restrict the following rational expressions:

a) $\frac{3+x}{5-x}$ 5 - x ≠ 0, so x ≠ 5 d)$ \frac{1}{xy}$

b)$ \frac{x^{2}-2x}{x^{2}}$ 0, so x ≠ 0 e)$ \frac{3x}{x^{2}+4}$ no

c)$ \frac{3x}{9-x^{2}}$ 9 - x2 ≠ 0, so x ≠ ±3 f) $\frac{-2x^{2}}{x^{2}+4x-5}$ (x 0, so x≠1,-5

**SIMPLIFYING RATIONAL EXPRESSIONS**

|  |
| --- |
| 1) Common factor or factor the expressions both in the numerator and denominator.2) State restrictions.3) Cancel out the same terms4) State restrictions one more time. |

Ex1.

 Restriction: x ≠ 0

Ex2.

= Restriction: x ≠ -3 or 5

=

Ex3.