6.1 Rational Expressions

Definition: A rational expression is an algebraic expression whereby the [ ] are polynomials.

ex.

* When working with rational expressions, we must consider the restrictions on the domain. These come from cases when we try to [ ]

ex. $\frac{5x + 1}{3x + 4}$

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

ex. $\frac{2x - 1}{x^2 - x - 12}$

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Definition: Two rational expressions are [ ] if we multiply or divide both the [ ] by the same non-zero expression.

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

ex. $\frac{3}{(x - 2)}$

NOTE: two equivalent rational expressions do not necessarily have the same domain restrictions!!!!!

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

ex. $\frac{3}{(x - 2)}$

Method: to simplify a rational expression...

1) State restrictions

2) Factor the numerator and the denominator and [ ] anything they have in [ ]

ex. $\frac{16x^2 - 9y^2}{8x - 6y}$

ex. $\frac{6x^2 + 7x - 5}{3x^2 - 7x - 20}$

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