8.1 Reducing Rational Expressions

Determine the value, if any exist that make this expression undefined. (Find the restrictions)

a. $\dfrac{3}{2x-1}$

b. $\dfrac{m^2-4}{m^2-2m-3}$

c. $\dfrac{x-5}{x^2+1}$

Find the value of each rational expression for the given value of the variable.

a. $\dfrac{2x}{x^2+1}$; $x=2$

b. $\dfrac{a-3}{a^2-5}$; $a=3$

To reduce rational expressions—factor both the numerator and denominator, the "divide out" common factors.

$$\frac{5x+15}{5x+20}=\frac{\cancel{5}(x+3)}{\cancel{5}(x+4)}=\frac{x+3}{x+4}$$

Reduce each rational expression to lowest terms. State any restrictions on the variable. **Remember, no denominator can be 0.** This restriction applies to denominators **before and after** a rational expression is reduced.

a. $\dfrac{2x+4}{3x+6}$

b. $\dfrac{x^2-16}{x-4}$

c. $\dfrac{a}{a^2-5a}$

d. $\dfrac{3-y}{y-3}$

a. $-\dfrac{-2x+6}{x^2-3x}$

b. $-\dfrac{5-10x}{6x-3}$

$c.\dfrac{a^2-8a-9}{a^2-9a-10}$

$d.\dfrac{-4x+8}{x^2-4}$

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