Rational Expressions

1. Find an equivalent rational expression in lowest terms, and identify the value(s) of the variable that must be excluded to prevent division by zero.

a) $\dfrac{3x - 2y}{9x^2 - 4y^2}$

b) $\dfrac{4a^2 - 12ab}{a^2 - 6ab + 9b^2}$

c) $\dfrac{y - x}{x - y}$

d) $\dfrac{a^2 - b^2}{b + a}$

e) $\dfrac{4x - 2y}{3y - 6x}$

f) $\dfrac{9 - x^2}{(x-3)^3}$

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a) $\dfrac{3x - 2y}{9x^2 - 4y^2}$

$\dfrac{1}{3x + 2y}$

$y \neq \dfrac{3}{2}x \text{ and } y \neq -\dfrac{3}{2}x$

b) $\dfrac{4a^2 - 12ab}{a^2 - 6ab + 9\;{}^2}$

$\dfrac{4a}{a - 3b}$

$a \neq 3b$

c) $\dfrac{y - x}{x - y}$

$-1 \qquad\qquad x \neq y$

d) $\dfrac{a^2 - b^2}{b + a}$

$a - b \qquad\qquad a \neq -b$

e) $\dfrac{4x - 2y}{3y - 6x}$

$-\dfrac{2}{3} \qquad\qquad y \neq 2x$

f) $\dfrac{9 - x^2}{(x - 3)^3}$

$-\dfrac{3 + x}{(x - 3)^2} \qquad\qquad x \neq 3$