

Section 6.1 Extra Practice

1. State the operation and quantity that must be applied to both the numerator and the denominator of the first expression to get the second expression.

a) $\frac{-3}{x}, \frac{-3xy^2}{x^2y^2}$ b) $\frac{2}{x-5}, \frac{2x+10}{x^2-25}$

c) $\frac{3a^2}{a^2+4a}, \frac{3a}{a+4}$ d) $\frac{x^2-2x}{x^2-x-2}, \frac{x}{x+1}$

2. Determine the non-permissible value(s) for each rational expression.

a) $\frac{5}{x+3}$

b) $\frac{7}{xy}$

c) $\frac{x+3}{(x+4)(x-5)}$

d) $\frac{1-x}{3x+5}$

e) $\frac{2a}{a^2-3a}$

f) $\frac{m+1}{m^2+5m+6}$

3. Simplify each rational expression. State any non-permissible values.

a) $\frac{3(x+5)}{(x+5)(x-5)}$

b) $\frac{(x-7)(x+2)}{-5x(7-x)}$

c) $\frac{(x+3)^2}{3(x+3)(x-3)}$

d) $\frac{3x(4x-1)}{(4x-1)(3x+1)}$

e) $\frac{25(x-5)(x+1)}{10(2x+1)(x-5)}$

f) $\frac{4xy(y-9)}{(y-9)(x+4)}$

4. Simplify. State any non-permissible values.

a) $\frac{6r^2st}{10rs^2t^2}$

b) $\frac{3x-6}{x^2-4}$

c) $\frac{cd}{cd+d}$

d) $\frac{7m-c}{4c-28m}$

e) $\frac{x^2+x}{x^2-4x-5}$

f) $\frac{y^2-2y-3}{y^2-3y}$

5. Simplify. Identify any non-permissible values.

a) $\frac{3x^2+11x-4}{x^2+8x+16}$

b) $\frac{4+8a+4a^2}{16-16a^2}$

c) $\frac{2x^2+5x+2}{5x^2-5x-30}$

d) $\frac{12x^2+4x}{3x^2-5x-2}$

e) $\frac{4t^3-16t}{6+t-2t^2}$

f) $\frac{15x^3+5x^2}{6x^2-13x-5}$

6. Jesse incorrectly simplified a rational expression, as shown. What was Jesse's error? Show the correct solution.

$$\begin{aligned} \frac{3x^2-x-4}{12x^2-13x-4} &= \frac{(3x-4)(x+1)}{(4x+1)(3x-4)} \\ &= \frac{x+1}{4x+1} \\ &= \frac{1}{4}, x \neq \frac{-1}{4} \end{aligned}$$

