# 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)** $\dfrac{-3}{x}$, $\dfrac{-3xy^2}{x^2y^2}$      **b)** $\dfrac{2}{x-5}$, $\dfrac{2x+10}{x^2-25}$

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

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

**a)** $\dfrac{5}{x+3}$

**b)** $\dfrac{7}{xy}$

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

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

**e)** $\dfrac{2a}{a^2-3a}$

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

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

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

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

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

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

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

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

**4.** Simplify. State any non-permissible values.

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

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

**c)** $\dfrac{cd}{cd+d}$

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

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

**f)** $\dfrac{y^2-2y-3}{y^2-3y}$

**5.** Simplify. Identify any non-permissible values.

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

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

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

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

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

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

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

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