Section 6.1 Focus Exercises

1. For each fraction, identify the value that x cannot be.

a) $\frac{x + 1}{x - 8}$ b) $\frac{3x + 7}{x + 3}$ c) $\frac{6x + 12}{4 - x}$ d) $\frac{2x - 14}{3x - 15}$

e) $\frac{4x + 6}{4x - 8}$ f) $\frac{x}{12x + 4}$ g) $\frac{4x^2}{12 - 2x}$ h) $\frac{x^2 + 8x + 16}{5 - 10x}$

2. Simplify each fraction by factoring each numerator and denominator. Some of these have factors that can reduce to either $\frac{1}{1}$ or $\frac{-1}{1}$. (You may need to first write the numerator or denominator in descending order.)

a) $\frac{x^2 + 5x}{2x + 10}$ b) $\frac{5x - 10}{x^2 - 4}$

c) $\frac{4x + 20}{15 + 3x}$ d) $\frac{3x + x^2}{5x + 15}$

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

g) $\frac{4 - x^2}{-2 + x}$ h) $\frac{9 - x^2}{4x + 12}$

3. Simplify each rational expression.

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

b) $\dfrac{x^2 + 2x - 15}{x^2 - 9}$

c) $\dfrac{x^2 + 8x + 12}{x^2 + 2x}$

d) $\dfrac{3x^2 + 12x}{8 + 2x}$

e) $\dfrac{x^2 - 3x - 4}{16 - 4x}$

f) $\dfrac{x + 6}{x^2 + 5x - 6}$

g) $\dfrac{x^2 - 8x + 12}{6x - 3x^2}$

h) $\dfrac{6 - 2x}{x^2 + 7x - 30}$

i) $\dfrac{4x^2 - 12x + 5}{4x^2 - 1}$

j) $\dfrac{x^2 + 2x - 48}{x^2 - 7x + 6}$