Unit 11.3 Adding and Subtracting Rational Expressions

1. Find the equivalent numerator to make the rational expression valid

   a. $\frac{4x}{x-3} = \frac{\qquad\qquad}{(x-3)(x-9)}$

   b. $\frac{-6}{5x+6} = \frac{\qquad\qquad}{25x+30}$

   c. $\frac{x+3}{x+8} = \frac{\qquad\qquad}{(x+8)(x-1)}$

2. Add the following rational expressions and simplify as much as possible

   a. $\frac{3x}{x+4} + \frac{12}{x+4}$

   b. $\frac{x-5}{x^2-2x+1} + \frac{x+3}{x^2-2x+1}$

c. $\frac{5}{x-3}+\frac{x}{x^2-9}$

d. $\frac{x+2}{3x+9}+\frac{2x-1}{2x-6}$

e. $\frac{x-6}{7x^2-3x-4}+\frac{7-x}{7x^2+18x+8}$

f. $\frac{3x+9}{x^2-5x+4}+\frac{49}{12+x-x^2}+\frac{3x+21}{x^2+2x-3}$

g. $\frac{y^2 - 5y}{y + 5} + \frac{7y - 15}{y + 5}$

h. $\frac{x}{8} + \frac{5}{3}$

3. Subtract the following rational expressions and simplify as much as possible

a. $\frac{2x + 5}{2x^2 - x - 1} - \frac{4x + 2}{2x^2 - x - 1}$

b. $\frac{x^2 + 2}{x^2 - 4} - \frac{4x - 2}{x^2 - 4}$

c. $\dfrac{x}{x-1} - \dfrac{4}{x+2}$

d. $\dfrac{3x}{6+x} - \dfrac{2x}{x^2-36}$

e. $\dfrac{x-3}{4x^2-5x-6} - \dfrac{4x+10}{2x^2+x-10}$

f. $\frac{d+4}{2d} - \frac{d-5}{7d}$

g. $\frac{x+5}{x-4} - \frac{x-2}{x}$

4. Perform the requested operations and simplify as much as possible

a. $\frac{x+1}{2x^2-x-1} + \frac{2x}{2x^2+5x+2} - \frac{2x}{3x^2+4x-4}$