1. For each of the following rational expressions, indicate the restrictions and simplify if possible.

a) $\frac{5x^2}{20x^3}$ ___ $\frac{1}{4x}$ $(x \neq 0)$

b) $\frac{4x^2-6x}{3x^2+6x}$ ___ $\frac{4x-6}{3x+6}$ $(x \neq 0 \text{ and } x \neq -2)$

c) $\frac{5x+10y}{5x-10y}$ ___ $\frac{x+2y}{x-2y}$ $(x \neq 2y)$

d) $\frac{2x^2+6x}{6x^2+10x}$ ___ $\frac{x+3}{3x+5}$ $\left(x \neq 0 \text{ and } x \neq \frac{-5}{3}\right)$

e) $\frac{6x^3+4x^2}{9x^2+6x}$ ___ $\frac{2x}{3}$ $\left(x \neq 0 \text{ and } x \neq \frac{-2}{3}\right)$

f) $\frac{x^2+3x+2}{x^2+x-2}$ ___ $\frac{x+1}{x-1}$ $(x \neq -2 \text{ and } x \neq 1)$

g) $\frac{2x^2-x-6}{2x^2+5x+3}$ ___ $\frac{x-2}{x+1}$ $\left(x \neq \frac{-3}{2} \text{ and } x \neq -1\right)$

h) $\frac{x^2-9}{x^2+6x+9}$ ___ $\frac{x-3}{x+3}$ $(x \neq -3)$

2. For each of the following rational expressions, indicate the restrictions and simplify if possible.

a) $\frac{x^2-5x}{x^2-25}$ ___ $\frac{x}{x+5}$ $(x \neq 5 \text{ and } x \neq -5)$

b) $\frac{x^4-1}{x^3-x}$ ___ $\frac{x^2+1}{x}$ $(x \neq -1, x \neq 1 \text{ and } x \neq 0)$

c) $\frac{(x+2)^2-9}{x^2-25}$ ___ $\frac{x-1}{x-5}$ $(x \neq -5 \text{ and } x \neq 5)$

d) $\frac{x^2+2x-15}{x^2-9}$ ___ $\frac{x+5}{x+3}$ $(x \neq 3 \text{ and } x \neq -3)$

e) $\frac{2x^2+7x+3}{4x^2-1}$ ___ $\frac{x+3}{2x-1}$ $\left(x \neq \frac{-1}{2} \text{ and } x \neq \frac{1}{2}\right)$

f) $\frac{x^2+5x+6}{x^2+x-2}$ ___ $\frac{x+3}{x-1}$ $(x \neq -2 \text{ and } x \neq 1)$

g) $\frac{x^2-x-6}{2x^2-5x-3}$ ___ $\frac{x+2}{2x+1}$ $\left(x \neq 3 \text{ and } x \neq \frac{-1}{2}\right)$

h) $\frac{x^2-2x+1}{x^2-1}$ ___ $\frac{x-1}{x+1}$ $(x \neq 1 \text{ and } x \neq -1)$