Rational Expression:

Simplify the following expressions if possible:

$\frac{8}{12}$

$\frac{8+x}{2}$

1. Simplify the following:

a. $\frac{5x(x^2+4x+3)}{(x-6)(x^2-9)}$	b. $\frac{4y(y-3)(y+4)}{y(y^2-y-6)}$
c. $\frac{2z(z+5)(z^2+2z-8)}{(z-1)(z+5)(z-2)}$	d. $\frac{x^2-5x-24}{x^2-64}$

e. $\dfrac{(4w^2-3wy)(w+y)}{(3y-4w)(5w+y)}$

f. $\dfrac{(xz-4z)}{z^2(4-x)}$

g. $\dfrac{ab^2-5ab}{(5+b)(5-b)}$

h. $\dfrac{a^2x-b^2x}{by-ay}$

2. What values make the functions below undefined:

a. $\dfrac{x^2(x^2-5x-14)}{4x(x^2+6x+8)}$	b. $\dfrac{x(x^2+8x+12)}{-6(x^2-3x-10)}$

3. Multiply and Divide the following rational expressions. Be sure to simplify the answer.

a. $\dfrac{6c}{5d} \cdot \dfrac{15cd^2}{8a}$	b. $\dfrac{18xy^3}{7a^2b^2} \div \dfrac{12x^2y}{35a^2b}$
c. $\dfrac{12c^3d^2}{21ab} \cdot \dfrac{14a^2b}{8c^2d}$	d. $\dfrac{16mt^2}{21a^4b^3} \div \dfrac{24m^3}{7a^2b^2}$

e. $\dfrac{x^2-6x-16}{\backslash x^2-16x+64} \cdot \dfrac{x-8}{x^2+5x+6}$

f. $\dfrac{x^2-16}{12y+36} \div \dfrac{x^2-12x+32}{y^2-3y-18}$

g. $\dfrac{8x-20}{x^2+2x-35} \cdot \dfrac{x^2-7x+10}{4x^2-16}$

h. $\dfrac{x^2-9x+20}{x^2+10x+21} \div \dfrac{x^2-x-12}{6x+42}$

4. Simplify each complex fraction

a. $\dfrac{\frac{a+b}{4}}{\frac{a^2+b^2}{4}}$

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

c. $\dfrac{\frac{(x-2)^2}{2(x^2-5x+4)}}{\frac{x^2-4}{4x-10}}$

d. $\dfrac{\frac{x^2-y^2}{y^2-49}}{\frac{y-x}{y+7}}$