Ch 6 Review

9def 11, 12, 14e, 15
10def 20, 21, 22

9d) $\frac{(x+2)(x-2)}{x^2+25} \cdot \frac{2x(x+5)}{x(x+2)}$ $\boxed{\frac{2(x-2)(x+5)}{x^2+25} \quad x \neq 0, -2}$

e) $\frac{(d+1)(d+2)}{2(d+1)} \cdot \frac{2(d+3)}{(d+2)(d+3)}$ $\boxed{1 \quad d \neq -1, -2, -3}$

f) $\frac{(y-9)(y+1)}{(y-9)(y-1)} \cdot \frac{(y-1)(y-8)}{(y+1)(y-1)} \cdot \frac{(y+5)(y-5)}{5-y}$ $\boxed{-\frac{(y-8)(y+5)}{y-1} \quad y \neq \pm 1, 5, 9}$

10d) $\frac{3(a+3)}{a-3} \cdot \frac{a-3}{(a+3)(a+3)}$ $\boxed{\frac{3}{a+3} \quad a \neq \pm 3}$

e) $\frac{3x-2}{x(x+1)(x+2)} \cdot \frac{(3x+2)(x+2)}{(3x+2)(3x-2)} \cdot \frac{x}{1}$ $\boxed{\frac{1}{x+1} \quad x \neq 0, -1, -2, \pm\frac{2}{3}}$

f) $\frac{4-x^2}{6} \div \frac{x-2}{2}$ $\frac{(2-x)(2+x)}{6} \cdot \frac{2}{x-2}$ $\boxed{-\frac{(2+x)}{3} \quad x \neq 2}$

11a) $\frac{9}{2m} \cdot \frac{m}{3} \cdot \frac{m}{3}$ $\frac{9m}{18}$ $\boxed{\frac{m}{2} \quad m \neq 0}$

b) $\frac{(x-2)(x-1)}{(x-2)(x+2)} \cdot \frac{x+3}{x(x+3)} \cdot \frac{x+2}{1}$ $\boxed{\frac{x-1}{x} \quad x \neq 0, -3, \pm 2}$

c) $\frac{a-3}{a-4} \cdot \frac{a+3}{30} \cdot \frac{5(a-4)}{(a+3)(a-3)}$ $\frac{5}{30}$ $\boxed{\frac{1}{6} \quad a \neq 4, \pm 3}$

d) $\frac{3(x+4)}{(3x+4)(x-3)} \cdot \frac{x-3}{x+4} \cdot \frac{3x+4}{15}$ $\frac{3}{15}$ $\boxed{\frac{1}{5} \quad x \neq -\frac{4}{3}, 3, -4}$

Hilroy

12 $V = LWH$ $\quad H = \frac{V}{LW} = \frac{x(2x-3)(x+4)}{(2x-3)(x+4)}$ $\boxed{H = x}$ $x > \frac{3}{2}$

14e) $\frac{x}{(x+y)(x-y)} - \frac{y}{(y-x)(y+x)} \quad \frac{x}{(x+y)(x-y)} + \frac{y}{(x+y)(x-y)}$

$\frac{x+y}{(x+y)(x-y)} = \boxed{\frac{1}{x-y} \quad x \neq \pm y}$

15a) $\frac{8x-6}{12} - \frac{3x-6}{12}$ $\boxed{\frac{5x}{12}}$ 14b) $\boxed{\frac{m}{x} \quad x \neq 0}$ *not assigned

14c) $\frac{x+y}{x+y} = \boxed{1 \quad x \neq -y}$ *not assigned

15b) $\frac{4y-2}{6y} + \frac{3y-6}{6y} - \frac{y-8}{6y} \quad \frac{6y}{6y}$ $\boxed{1, y \neq 0}$

c) $\frac{9(x+3)}{(x-3)(x+3)} + \frac{7}{(x+3)(x-3)}$ $\boxed{\frac{9x+34}{(x+3)(x-3)} \quad x \neq \pm 3}$

d) $\frac{a(a-2)}{(a+3)(a-2)} - \frac{a^2-3a}{(a+3)(a-2)}$ $\boxed{\frac{a}{(a+3)(a-2)} \quad a \neq 2, -3}$

e) $\frac{a(a+b)}{(a-b)(a+b)} - \frac{2ab}{(a+b)(a-b)} + \frac{b(a-b)}{(a+b)(a-b)}$

$\frac{a^2+ab-2ab+ab-b^2}{(a+b)(a-b)} \quad \frac{a^2-b^2}{a^2-b^2}$ $\boxed{1 \quad a \neq \pm b}$

f) $\frac{2x(x+1)}{(2x+3)(2x-3)(x+1)} + \frac{x(2x-3)}{(2x+3)(x+1)(2x-3)} - \frac{1(2x+3)(x+1)}{(2x-3)(2x+3)(x+1)}$

$\frac{2x^2+2x+2x^2-3x-2x^2-5x-3}{(2x+3)(2x-3)(x+1)} \quad \frac{2x^2-6x-3}{(2x-3)(2x+3)(x+1)} \quad x \neq -1, \pm\frac{3}{2}$

cross multiply

20. a) $\frac{s}{s+3} = \frac{2}{s-3}$

$s-3 = 2(s+3)$

$s-3 = 2s+6$

$\boxed{s = -9 \quad s \neq -3}$

b) $\frac{x^2+x-2}{x+2} = \frac{3x^2+11x+6}{x+2}$

$0 = 2x^2+10x+8$

$0 = x^2+5x+4$

$0 = (x+1)(x+4)$

$\boxed{x = -1 \quad x = -4 \quad x \neq 1, -\frac{2}{3}}$

c) $\frac{5(z-2)}{5z} + \frac{z}{5z} = \frac{-4}{5z}$

$5z-10+z = -4$

$6z = 6$

$\boxed{z = 1 \quad z \neq 0}$

d) $\frac{3m(m+3)}{(m-3)(m+3)} + \frac{2(m+3)(m-3)}{(m-3)(m+3)} = \frac{(3m-1)(m-3)}{(m-3)(m+3)}$

$3m^2+9m+2m^2-18 = 3m^2-10m+3$

$2m^2+19m-21 = 0$

$(2m+21)(m-1) = 0$

$\boxed{m = -\frac{21}{2} \quad m = 1 \quad m \neq \pm 3}$

e) $\frac{x}{x-3} = \frac{3}{x-3} - \frac{3(x-3)}{x-3}$

$x = 3-3x+9$

$4x = 12$

$\boxed{x = 3 \quad x \neq 3 \quad \therefore \text{no solution}}$

f) $\frac{(x-2)(2x)}{(2x+1)(2x)} = \frac{x(2x+1)}{2x(2x+1)} + \frac{(x-3)(2x+1)}{(2x)(2x+1)}$

$2x^2-4x = 2x^2+x+2x^2-5x-3$

$0 = 2x^2-3$

$\frac{3}{2} = x^2$

$x = \pm\frac{\sqrt{3}}{\sqrt{2}}$

$\boxed{x = \pm\frac{\sqrt{6}}{2} \quad x \neq 0, -\frac{1}{2}}$

Hilroy

9) $\frac{3(x-3)}{(x+2)(x-3)} + \frac{5(x+2)}{(x+2)(x-3)} = \frac{3x}{(x+2)(x-3)} - \frac{(x+2)(x-3)}{(x+2)(x-3)}$

$3x-9+5x+10 = 3x - x^2 + x + 6$

$x^2+4x-5=0$

$(x+5)(x-1)=0$

$\boxed{x=-5 \quad x=1 \quad x \neq 3, -2}$

21. $x+y=12$ $\quad \frac{1}{x}+\frac{1}{y}=\frac{3}{8}$

$y=12-x$ $\quad \frac{1}{x}+\frac{1}{12-x}=\frac{3}{8}$

$\frac{12-x}{x(12-x)} + \frac{x}{x(12-x)} = \frac{3}{8}$

$\frac{12}{12x-x^2} = \frac{3}{8}$ cross multiply

$-3x^2+36x=96$

$x^2-12x+32=0$

$(x-8)(x-4)=0$

$x=8 \quad x=4$

$y=4 \quad y=8$ (4 and 8)

22

| | Time | fraction/hr | fraction in x hours |
|---|---|---|---|
| Matt | 5 | 1/5 | x/5 |
| Elaine | x | 1/x | 1 |
| Together | 3 | 1/3 | x/3 |

$\frac{x}{5} + 1 = \frac{x}{3}$

$\frac{3x}{15} + \frac{15}{15} = \frac{5x}{15}$

$3x+15=5x$

$15=2x$

$\boxed{x=7.5 \text{ hours}}$