(13)

pg 380

$$\frac{x+2}{x+6} - \frac{x-4}{x+6}$$

$$\frac{x+2-(x-4)}{x+6}$$

$$\frac{x+2-x+4}{x+6}$$

$$\frac{6}{x+6}$$

(34) $\dfrac{a+2}{a+1} + \dfrac{7}{a^2-5a-6}$ LCD = $(a+1)(a-6)$

$\dfrac{(a-6)}{(a-6)}\dfrac{a+2}{a+1} + \dfrac{7}{(a+1)(a-6)}$

$\dfrac{a^2-4a-12+7}{(a+1)(a-6)}$

$\dfrac{a^2-4a-5}{(a+1)(a-6)}$

$\dfrac{(a-5)\cancel{(a+1)}}{\cancel{(a+1)}(a-6)}$

$\dfrac{a-5}{a-6}$

(14) $\dfrac{x^2+5x+1}{7x-7} \cdot \dfrac{x-1}{x^2+5x+1}$

page 373

$\dfrac{(x-1)}{7(x-1)}$

$\dfrac{1}{7}$

(28) *

$$\frac{5y^2-6y+1}{y^2-1} \div \frac{16y^2-9}{4y^2+7y+3}$$

1st change to multiplication

$$\frac{5y^2-6y+1}{y^2-1} \cdot \frac{4y^2+7y+3}{16y^2-9}$$

$$\frac{(y-1)(5y-1)}{(y+1)(y-1)} \cdot \frac{(y+1)(4y+3)}{(4y-3)(4y+3)}$$

$$\frac{5y-1}{4y-3}$$

prod 5 -5(-1)
sum -6

$5y^2-5y-y+1$
$5y(y-1)-1(y-1)$
$(y-1)(5y-1)$

prod 12 4(3)
sum 7

$4y^2+4y+3y+3$
$4y(y+1)+3(y+1)$
$(y+1)(4y+3)$

(41) 7.3

$$\frac{1}{x} + \frac{x}{3x+9} - \frac{3}{x^2+3x}$$

LCD $= 3x(x+3)$

$$\frac{3(x+3)}{3(x+3)}\frac{1}{x} + \frac{x}{3(x+3)}\left(\frac{x}{x}\right) - \frac{3}{x(x+3)}\left(\frac{3}{3}\right)$$

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

$$\frac{x^2+3x}{3x(x+3)}$$

$$\frac{x(x+3)}{3x(x+3)}$$

$$\frac{1}{3}$$

7.5 (11) against 140 miles } same time
with 160 miles }
wind 20 mi/hr

$d = rt$

$\frac{d}{r} \quad \frac{r}{r}$

let x = The speed of plane with no wind

	distance	rate	time
with	160	$x + 20$	$\frac{160}{x+20}$
against	140	$x - 20$	$\frac{140}{x-20}$

$$(x+20)(x-20)\frac{160}{x+20} = \frac{140}{x-20}(x+20)(x-20)$$

$$(x-20)(160) = 140(x+20)$$

$$160x - 3200 = 140x + 2800$$
$$-140x \qquad -140x$$

$$20x - 3200 = 2800$$
$$+3200 \quad +3200$$

$$\frac{20x}{20} = \frac{6000}{20}$$

$$x = 300$$

The plane is going 300 mi/hr with no wind

(8) $$\frac{\frac{6x^4}{y}}{\frac{2x}{y^5}} = \frac{6x^4}{y} \cdot \frac{y^5}{2x}$$

$$3x^3y^4$$

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(22) $$\frac{a^2(1)+\left(\frac{1}{a}\right)a^2}{a^2(1)-\left(\frac{1}{a^2}\right)a^2}$$ LCd $= a^2$

$$\frac{a^2+a}{a^2-1}$$

$$\frac{a(a+1)}{(a+1)(a-1)}$$

$$\frac{a}{a-1}$$

#1

$$\frac{x^2-6x+9}{x^2-x-6}$$

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

$$\frac{x-3}{x+2}$$

$$\frac{x+2}{2(1)}$$

$$\frac{6+2}{2} =$$

$$\frac{8}{2} = 4$$

$$\frac{6(2)}{2} = 6$$

(2) $\frac{2x-8}{x^2-4} \cdot \frac{x^2+6x+8}{x-4}$:

$$\frac{2(x-4)(x+4)(x+2)}{(x+2)(x-2)(x-4)}$$

$$\frac{2(x+4)}{(x-2)}$$

③

$$\frac{x+1}{x^2-9} \div \frac{2x+2}{x+3}$$

$$\frac{x+1}{x^2-9} \cdot \frac{x+3}{2x+2}$$

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

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

leave in factored form

④

$$\frac{x^2+8x+16}{x^2+x-12} \div \frac{x^2-16}{x^2-x-6}$$

$$\frac{x^2+8x+16}{x^2+x-12} \cdot \frac{x^2-x-6}{x^2-16}$$

$$\frac{(x+4)(x+4)(x-3)(x+2)}{(x+4)(x-3)(x-4)(x+4)}$$

$$\frac{x+2}{x-4}$$

⑤ $\dfrac{a(1)+\left(\frac{1}{a}\right)^{a^1}}{a(1)-\left(\frac{1}{a}\right)^{a^1}}$

LCd = a

$\dfrac{a+1}{a-1}$

⑥ $\dfrac{6}{y^2-4} = \dfrac{4}{y^2+2y}$

LCD = $y(y-2)(y+2)$

$y(y-2)(y+2)\dfrac{6}{(y-2)(y+2)} = \dfrac{4y(y-2)(y+2)}{y(y+2)}$

$y \neq 0, 2, -2$

$6y = 4(y-2)$

$6y = 4y - 8$

$-4y \quad -4y$

$\dfrac{2y}{2} = \dfrac{-8}{2}$

$y = -4$