

37 problems

Algebra 2 - Assignment 1 + 35

NEW p 573: #5-11 odd, 15-31 odd, 37, 39

5. Find the LCD: $\frac{10x^2}{2^2 \cdot 5}, \frac{35xy^2}{5^2 \cdot 7}$ LCD = $2 \cdot 5 \cdot 7 \cdot x^2 \cdot y^2 = \boxed{70x^2y^2}$

7. $\frac{6}{ab} + \frac{8}{a} = \frac{6}{ab} + \frac{8 \cdot b}{a \cdot b} = \boxed{\frac{6+8b}{ab}}$

9. $\frac{1}{(x+1)} + 2 = \frac{1}{(x+1)} + \frac{2 \cdot (x+1)}{1 \cdot (x+1)} = \frac{1+2x+2}{x+1} = \boxed{\frac{3+2x}{x+1}}$

11. $\frac{6}{x^2+4x+4} + \frac{5}{x+2} = \frac{6}{(x+2)(x+2)} + \frac{5 \cdot (x+2)}{(x+2)(x+2)}$
 $= \frac{6+5x+10}{(x+2)(x+2)} = \boxed{\frac{5x+16}{(x+2)^2}}$

15. Find the LCD: $4w-12, 2w-6$ LCD = $2 \cdot 2(w-3)$
 $\frac{4(w-3)}{2 \cdot 2}, \frac{2(w-3)}{2}$ = $4(w-3) = \boxed{4w-12}$

17. Find the LCD: $x^2-y^2, x^2(x+y)$
 $(x+y)(x-y), x^2(x+y)$ LCD = $\boxed{x^2(x+y)(x-y)}$

19. Find the LCD: $2x-10, 2x^2-4x-30$
 $2(x-5), 2(x^2-2x-15)$ LCD = $\boxed{2(x-5)(x+3)}$
 $2(x-5)(x+3)$

21. $5 + \frac{x-3}{x+2} = \frac{5(x+2)}{(x+2)} + \frac{x-3}{x+2} = \frac{5x+10+x-3}{x+2} = \boxed{\frac{6x+7}{x+2}}$

23. $\frac{y}{y-4} - \frac{3}{4-y} = \frac{y}{y-4} - \frac{3}{-1(-4+y)} = \frac{y}{y-4} + \frac{3}{y-4} = \boxed{\frac{y+3}{y-4}}$

25. $y-3 + \frac{1}{y-3} = \frac{(y-3)(y-3)}{(y-3)} + \frac{1}{y-3} = \frac{y^2-3y-3y+9+1}{y-3} = \boxed{\frac{y^2-6y+10}{y-3}}$

Asmt 35, continued

$$29. \frac{x}{x+3} - \frac{6x}{x^2-9} = \frac{x}{x+3} - \frac{6x}{(x+3)(x-3)} = \frac{x(x-3)}{(x+3)(x-3)} - \frac{6x}{(x+3)(x-3)}$$

$$= \frac{x^2-3x-6x}{(x+3)(x-3)} = \frac{x^2-9x}{(x+3)(x-3)} = \boxed{\frac{x(x-9)}{(x+3)(x-3)}}$$

$$31. \frac{x}{x^2+2x+1} - \frac{x+2}{x+1} - \frac{3x}{x+1} = \frac{x}{(x+1)(x+1)} - \frac{(x+2)(x+1)}{(x+1)(x+1)} - \frac{3x(x+1)}{(x+1)(x+1)}$$

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

$$= \boxed{\frac{-4x^2 - 5x - 2}{(x+1)(x+1)}}$$

$$37. \frac{x+1}{x-1} + \frac{x+2}{x-2} + \frac{x}{x^2-3x+2} = \frac{(x+1)(x-2)}{(x-1)(x-2)} + \frac{(x+2)(x-1)}{(x-2)(x-1)} + \frac{x}{(x-2)(x-1)}$$

$$= \frac{x^2-2x+x-2 + x^2-x+2x-2 + x}{(x-1)(x-2)} = \boxed{\frac{2x^2+x-4}{(x-1)(x-2)}}$$

$$39. \frac{1}{x+2} + \frac{1}{x-5} = \frac{1(x-5)}{(x+2)(x-5)} + \frac{1(x+2)}{(x-5)(x+2)} = \frac{(x-5)+(x+2)}{(x+2)(x-5)} \cdot \frac{(x+2)(x-5)}{(2x-3)(x+1)}$$

$$\frac{2x^2-x-3}{x^2-3x-10} = \frac{(2x-3)(x+1)}{(x+2)(x-5)}$$

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

REVIEW (packet)

$$1. \quad 2x - 4y = 14 \rightarrow 2x - 4y = 14$$

$$4(-3x + y) = (-21)4 \rightarrow -12x + 4y = -84$$

$$\begin{array}{r} -10x = -70 \\ -10 \quad -10 \\ \hline x = 7 \end{array}$$

$$\rightarrow -3(7) + y = -21$$

$$\begin{array}{r} -21 + y = -21 \\ +21 \quad +21 \\ \hline y = 0 \end{array}$$

$(7, 0)$

Asmt 35 - continued

2. (1+8i)-(5-4i) = 1+8i-5+4i = -4+12i

3. cube root of (2x+3) - 3 = -1

(cube root of (2x+3))^3 = 2^3

2x+3 = 8

2x = 5/2 -> x = 5/2

4. p(x) = 2/3 x^2 + 5x p(5) = 2/3 (5)^2 + 5(5)

= 2/3 (25) + 25

= 50/3 + 25(3/3)

= 50/3 + 75/3 = 125/3

5. h(x) = (x^2+5x-6)/(x+3) h(a-1) = ((a-1)(a-1) + 5(a-1) - 6) / ((a-1)+3)

= (a^2 - a - a + 1 + 5a - 5 - 6) / (a+2) = (a^2 + 3a - 10) / (a+2)

or (a+5)(a-2) / (a+2)

b. Solve by quadratic formula: 2x^2 + 2x - 7 = 0

x = (-2 +/- sqrt(2^2 - 4(2)(-7))) / (2(2)) = (-2 +/- sqrt(4+56)) / 4 = (-2 +/- sqrt(60)) / 4

= (-2 +/- 2*sqrt(15)) / 4 = (-1 +/- sqrt(15)) / 2

7. 9x^2 + 4 = 2x -> 9x^2 - 2x + 4 = 0

x = (2 +/- sqrt((-2)^2 - 4(9)(4))) / (2(9)) = (2 +/- sqrt(4-144)) / 18 = (2 +/- sqrt(-140)) / 18

= (2 +/- 2i*sqrt(35)) / 18 = (1 +/- i*sqrt(35)) / 9

Asmt 35 continued

8. $7x = 8x^2 \rightarrow 0 = 8x^2 - 7x$

$$x = \frac{+7 \pm \sqrt{(-7)^2 - 4(8)(0)}}{2(8)} = \frac{7 \pm \sqrt{49}}{16} = \frac{7 \pm 7}{16}$$

$\begin{cases} = \frac{14}{16} = \frac{7}{8} \\ = \frac{0}{16} = 0 \end{cases}$

$x = 0, \frac{7}{8}$

9. $-x^2 - 5x - 6 > 0$

$-3 < x < 2$

10. $13x - 29x^2 + 6 < 0$

$x < -0.29$ OR $x > 7.75$

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22. $2c^2 + 18c - 44 = 0$

$$2(c^2 + 9c - 22) = 0$$

$$2(c+11)(c-2) = 0$$

$\rightarrow 2 \neq 0, \frac{c+11}{-11-11} = 0, \frac{c-2}{+2+2} = 0$

$c = -11, c = 2$

33. $-x^2 + 5x - 9 = 0$

$$x = \frac{-5 \pm \sqrt{(5)^2 - 4(-1)(-9)}}{2(-1)} = \frac{-5 \pm \sqrt{25-36}}{-2} = \frac{-5 \pm \sqrt{-11}}{-2}$$

$\text{or } \frac{5 \pm i\sqrt{11}}{2}$

39. Roots: $-\frac{13}{2}, -4$

$x = -4 \rightarrow x+4=0$

$x = -\frac{13}{2} \rightarrow 2x = -13 \rightarrow 2x+13=0$

$(x+4)(2x+13) = 0$

$$2x^2 + 13x + 8x + 52 = 0$$

$$2x^2 + 21x + 52 = 0$$

Page 889 (6-3) Completing the Square

12. $x^2 + 2x - 63 = 0$

$(\frac{2}{2})^2 = 1$

$$x^2 + 2x + 1 = 63 + 1$$

$$\sqrt{(x+1)^2} = \sqrt{64}$$

$$x+1 = \pm 8$$

$x = 8-1 \quad x = -8-1$

$x = 7, x = -9$

Asmt 35, continued

20. $x^2 + 14x - 1 = 0$ $(\frac{14}{2})^2 = 7^2$
 $x^2 + 14x + 49 = 1 + 49$
 $(x+7)^2 = 50$
 $\sqrt{(x+7)^2} = \pm\sqrt{50}$
 $x+7 = \pm\sqrt{50} \rightarrow x = -7 \pm \sqrt{50} \xrightarrow{25} \rightarrow \boxed{x = -7 \pm 5\sqrt{2}}$

Page 891 (6-7)

12. $x^2 - 2x - 8 \leq 0$ $(-)(-)$ $(-)(+)$ $(+)(+)$
 $(x-4)(x+2) \leq 0$ \oplus \ominus \oplus
 $x = 4$ $x = -2$ $-2 \leq x \leq 4$

16. $2x^2 \geq 5x + 12$ $(-)(-)$ $(+)(-)$ $(+)(+)$
 $2x^2 - 5x - 12 \geq 0$ \oplus $-\frac{3}{2}$ 0 \ominus 4 \oplus
 $(2x+3)(x-4) \geq 0$ $x \leq -\frac{3}{2}$ or $x \geq 4$
 $x = -\frac{3}{2}, x = 4$

18. $2x - x^2 \leq -15$ $(-)(-)$ $(-)(+)$ $(+)(+)$
 $0 \leq x^2 - 2x - 15$ \oplus -3 0 \ominus 5 \oplus
 $0 \leq (x-5)(x+3)$ $x \leq -3$ or $x \geq 5$
 $x = 5, x = -3$

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8. $\frac{m^3}{3n} \div \frac{m^4}{9n^2} = \frac{m^3}{3n} \cdot \frac{9n^2}{m^4} = \frac{-3n}{m}$

12. $\frac{5}{m-3} \div \frac{10}{m-3} = \frac{5}{m-3} \cdot \frac{m-3}{10} = \frac{1}{2}$

4. $\frac{w^2 - 11w + 24}{w^2 - 18w + 80} \cdot \frac{w^2 - 15w + 50}{w^2 - 9w + 20} = \frac{(w-8)(w-3)}{(w-8)(w-10)} \cdot \frac{(w-10)(w-5)}{(w-4)(w-5)}$
 $= \frac{w-3}{w-4}$

Asmt 35 - continued

P 566 cont.

$$30. \frac{4a^3b}{7c^2d^3} \cdot \frac{21c^3d}{40abc^2} = \frac{3a^2be^3d}{4abc^4d^3/2} = \boxed{\frac{3a^2}{4cd^2}}$$

$$40. \frac{6y^2-6}{8y^2+8y} = \frac{6y^2-6}{8y^2+8y} \div \frac{3y-3}{4y^2+4y} = \frac{6y^2-6}{8y^2+8y} \cdot \frac{4y^2+4y}{3y-3}$$

$$= \frac{6(y^2-1)}{8y(y+1)} \cdot \frac{4y(y+1)}{3(y-1)} = \frac{(y+1)(y-1)}{(y+1)} = \boxed{y-1}$$