

35 problems

Review #9 worth 2 points

Algebra 2 ~ Assignment 36

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7. $\frac{1}{m-4} = \frac{2}{m-2} \rightarrow \frac{(m-4)(m-2)1}{(m-4)} = \frac{(m-4)(m-2)2}{(m-2)}$

LCD = (m-4)(m-2)

m ≠ 4, 2

$$\begin{array}{r} m-2 = 2m-8 \\ -m \quad -m \\ \hline -2 = m-8 \end{array}$$

$$\begin{array}{r} -2 = m-8 \\ +8 \quad +8 \\ \hline 6 = m \end{array}$$

6 = m

9. $\frac{x^{(15)}}{3} - \frac{2^{(15)}}{5} = 1^{(15)}$

$$\frac{15x - 30}{3} = 15 \rightarrow \frac{5x - 6}{1} = 15$$

$$\begin{array}{r} 5x - 6 = 15 \\ +6 \quad +6 \\ \hline 5x = 21 \end{array}$$

$x = \frac{21}{5}$

13. $\frac{(x+2)^{(2)}}{2} - \frac{3^{(4)}}{4} = x^{(4)}$

$$\rightarrow 2(x+2) - 3 = 4x$$

$$\begin{array}{r} 2x + 4 - 3 = 4x \\ -2x \quad -2x \\ \hline 1 = 2x \end{array}$$

LCD = 4 no restrictions

$$\frac{1}{2} = \frac{2x}{2} \rightarrow$$

$x = \frac{1}{2}$

15. $\frac{6 \cdot m^2}{m} = \frac{9 \cdot m^2}{m^2}$

$$\rightarrow \frac{6m}{1} = \frac{9}{1}$$

LCD = m², m ≠ 0

m = 3/2

19. $\frac{(x+1)^{(3)}}{3} + \frac{(x-1)^{(3)}}{3} = \frac{4^{(3)}}{3}$

$$\rightarrow x+1+x-1=4$$

$$\begin{array}{r} 2x = 4 \\ \hline 2 \quad 2 \end{array}$$

x = 2

23. $\frac{1 \cdot 6(m+2)(3-m)}{(m+2)} - \frac{1 \cdot 6(m+2)(3-m)}{(3-m)} = \frac{-1 \cdot 6(m+2)(3-m)}{6}$

LCD = 6(m+2)(3-m)

m ≠ -2, 3

$$\rightarrow 18 - 6m - 6m - 12 = +(-3m + m^2 + 6 + 2m)$$

$$\begin{array}{r} 6 - 12m = m^2 - m - 6 \\ -6 + 12m \quad +12m - 6 \\ \hline 0 = m^2 + 11m - 12 \end{array}$$

0 = m² + 11m - 12

0 = (m+12)(m-1)

m = -12, 1

Asmt 36-continued

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$$25. \frac{1 \cdot 18a^2}{9} + \frac{1 \cdot 18a^2}{2a} = \frac{1 \cdot 18a^2}{a^2} \rightarrow 2a^2 + 9a = 18$$

$$\text{LCD} = 18a^2$$

$$a \neq 0$$

$$\frac{-18 \quad -18}{-18 \quad -18}$$

$$2a^2 + 9a - 18 = 0$$

$$(2a - 3)(a + 6) = 0 \quad \boxed{a = -6, \frac{3}{2}}$$

$$27. \frac{3 \cdot x(x+3)}{x^2+3x} + \frac{(x+2)x(x+3)}{x+3} = \frac{1 \cdot x(x+3)}{x} \rightarrow \frac{3 + x^2 + 2x}{-3} = \frac{x+3}{-x-3}$$

$$\text{LCD} = x(x+3)$$

$$x \neq 0, -3$$

$$x^2 + x = 0$$

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

$$\cancel{x=0}, x+1=0 \quad \boxed{x = -1}$$

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$$5. \frac{1(x+1)(x-1)}{(x+1)} + \frac{1(x+1)(x-1)}{(x-1)} = \frac{2(x+1)(x-1)}{(x+1)(x-1)} \rightarrow x-1 + x+1 = 2$$

$$\text{LCD} = (x+1)(x-1)$$

$$x \neq -1, 1$$

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

$$x = 1 \text{ but } x \neq 1, \text{ so } \boxed{\emptyset}$$

$$6. \frac{2 \cdot x(x-2)}{x} + \frac{1 \cdot x(x-2)}{(x-2)} = \frac{1 \cdot x(x-2)}{1 \cdot x(x-2)} \rightarrow 2x - 4 + x = x^2 - 2x$$

$$\text{LCD} = x(x-2)$$

$$x \neq 0, 2$$

$$\frac{3x-4}{-3x+4} = \frac{x^2-2x}{-3x+4}$$

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

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

$$0 = x-4, 0 = x-1 \quad \boxed{x = 1, 4}$$

$$7. \frac{1(x-3)(x+5)}{(x-3)} + \frac{1(x-3)(x+5)}{(x+5)} = \frac{(x+1)(x+5)(x-3)}{(x-3)} \rightarrow x+5 + x-3 = x^2 + 5x + x + 5$$

$$\text{LCD} = (x-3)(x+5)$$

$$x \neq 3, -5$$

$$\frac{2x+2}{-2x-2} = \frac{x^2+6x+5}{-2x-2}$$

$$0 = x^2 + 4x + 3$$

$$0 = (x+3)(x+1)$$

$$0 = x+3, 0 = x+1 \quad \boxed{x = -3, -1}$$

Asmt 36 - continued

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8. $\frac{4}{x^2-2x-3} = \frac{-x}{3-x} - \frac{1}{x+1}$

$\frac{4(x-3)(x+1)}{(x-3)(x+1)} = \frac{-x(x-3)(x+1)}{x(x-3)} - \frac{1(x-3)(x+1)}{(x+1)}$

$\rightarrow 4 = x^2 + x - x + 3$

$0 = x^2 - 1$

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

$0 = x+1 \quad 0 = x-1$

$x = -1 \quad x = 1$

LCD = $(x-3)(x+1)$

$x \neq 3 \quad x \neq -1$

REVIEW (packet)

1. $\frac{a^1 a^2 (ab^{-2})^{-2}}{ba(a^2b^3)^{-3}b^2} = \frac{a^2 \cdot a^{-2} b^4}{a^{-6} b^9 b^2} = \frac{a^0 b^4}{a^{-6} b^7} = a^6 b^{-3} = \boxed{a^6 b^{-3}}$

2. $3x^2 - 11x - 4 = 0$

$(3x+1)(x-4) = 0$

$3x+1=0 \quad x-4=0$

$\frac{-1}{3} = \frac{-1}{3} \quad \frac{+4}{1} = \frac{+4}{1}$

$x = -\frac{1}{3}, 4$

3. $4x^2 + 2x - 6 = 0$

$2(2x^2 + x - 3) = 0$

$2(2x+3)(x-1) = 0$

$2x+3=0 \quad x-1=0$

$\frac{-3}{2} = \frac{-3}{2} \quad \frac{+1}{1} = \frac{+1}{1}$

$x = -\frac{3}{2}, 1$

4. $x^2 + 9x + \frac{81}{4} = -25 + \frac{81}{4}$

$(x + \frac{9}{2})^2 = -\frac{100}{4} + \frac{81}{4}$

$\sqrt{(x + \frac{9}{2})^2} = \pm \sqrt{-\frac{19}{4}}$

$x + \frac{9}{2} = \pm \frac{\sqrt{-19}}{2}$

$x = \frac{-9 \pm \sqrt{-19}}{2}$

5. $4x^2 - 6x - 3 = 0$

$x = \frac{6 \pm \sqrt{36 - 4(4)(-3)}}{2(4)} = \frac{6 \pm \sqrt{36 + 48}}{8} = \frac{6 \pm \sqrt{84}}{8} = \frac{6 \pm 2\sqrt{21}}{8} = \boxed{\frac{3 \pm \sqrt{21}}{4}}$

Asmt 3b continued

6. $x^2 + 5x + 8 = 0$

$x = \frac{-5 \pm \sqrt{25 - 4(1)(8)}}{2(1)} = \frac{-5 \pm \sqrt{25 - 32}}{2} = \frac{-5 \pm \sqrt{-7}}{2} = \frac{-5 \pm i\sqrt{7}}{2}$

7. $4x^2 + 8x + 3 = 0$

$x = \frac{-8 \pm \sqrt{64 - 4(4)(3)}}{2(4)} = \frac{-8 \pm \sqrt{64 - 48}}{8} = \frac{-8 \pm \sqrt{16}}{8} = \frac{-8 \pm 4}{8} = \frac{-4}{8} = -\frac{1}{2}$
 $\frac{-8 - 4}{8} = \frac{-12}{8} = -\frac{3}{2}$

$x = -\frac{1}{2}, -\frac{3}{2}$

8. $9a^2 - 30a + 25 = 0$

$x = \frac{30 \pm \sqrt{900 - 4(9)(25)}}{2(9)} = \frac{30 \pm \sqrt{900 - 900}}{18} = \frac{30}{18} = \frac{5}{3}$

(2pts)

9. Grandma's age is 8 years less than 7 times Stephanie's age. The sum of their ages is 96. Find their ages.

$x =$ Grandmas age
 $y =$ Stephanie's age

$x = 7y - 8$
 $x + y = 96$
 $(7y - 8) + y = 96$
 $8y - 8 = 96$
 $8y = 104$

$x = 7(13) - 8$
 $x = 91 - 8$
 $x = 83$

Grandma is 83 years old, and Stephanie is 13 years old.

$\frac{8y}{8} = \frac{104}{8} \rightarrow y = 13$

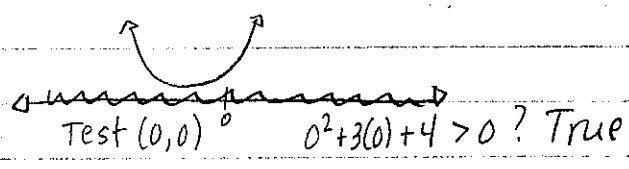
10. Solve on the calculator:

$|2x + 3| = 7 \rightarrow |2x + 3| - 7 = 0$ $x = -5, 2$

Solve using calculator:

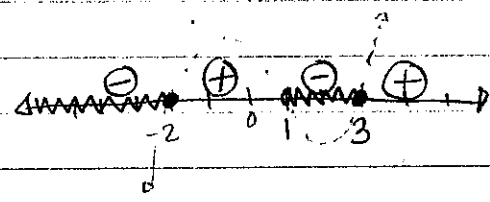
11. $x^2 + 3x + 4 > 0$

$x \in \mathbb{R}$



12. $x^3 - 2x^2 - 5x + 6 \leq 0$

$x \leq -2$ or $1 \leq x \leq 3$



Assignment 36 - Continued

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38. $(x-4)(x+7) < 0$
 $x-4=0 \quad x+7=0$
 $x=4 \quad x=-7$

$-7 < x < 4$

48. $f^2 + 12f + 36 < 0$
 $(f+6)(f+6) < 0$
 $f+6=0$
 $f=-6$

\emptyset (no solutions)

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18. $\frac{(-3x^2y)^3}{9x^2y^2} = \frac{-27x^6y^3}{9x^2y^2} = \boxed{-3x^4y}$

24. $\frac{35}{16x^2} \div \frac{21}{4x} = \frac{35}{16x^2} \cdot \frac{4x}{21} = \boxed{\frac{5}{12x}}$

26. $\frac{(ab)^2}{a^3b} \cdot \frac{ax^2}{xa^3b} = \frac{a^2b^2x}{a^3b} = \boxed{\frac{bx}{a}}$

32. $\frac{3x+6}{7x-7} \cdot \frac{14x-14}{5x+10} = \frac{3(x+2) \cdot 14(x-1)}{7(x-1) \cdot 5(x+2)} = \boxed{\frac{6}{5}}$

38. $\frac{x+y}{2x-y} = \frac{(x+y)}{(2x-y)} \cdot \frac{(2x+y)}{(x+y)} = \boxed{\frac{2x+y}{2x-y}}$

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8. $\frac{2}{x^2y} - \frac{1 \cdot x}{xy^2} = \frac{2}{x^2y} - \frac{x}{x^2y} = \boxed{\frac{2-x}{x^2y}}$

10. $\frac{7}{y-8} - \frac{6}{8-y} = \frac{7}{y-8} - \frac{6}{-1(y-8)} = \frac{7}{y-8} + \frac{6}{y-8} = \boxed{\frac{13}{y-8}}$

20. $\frac{3m+2}{m+n} + \frac{4}{2m+2n} = \frac{3m+2}{m+n} + \frac{4^2}{2(m+n)} = \boxed{\frac{3m+4}{m+n}}$

32. $\frac{1}{x^2-9x+20} - \frac{5}{x^2-10x+25} = \frac{1(x-5)}{(x-5)(x-4)(x-5)} + \frac{-5(x-4)}{(x-5)(x-5)(x-4)}$
 $= \frac{x-5-5x+20}{(x-4)(x-5)(x-5)} = \boxed{\frac{-4x+15}{(x-4)(x-5)(x-5)}}$

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