MA115 – Thursday – week 1

$(a-b)(b-a) \neq (a-b)(a-b)$ why $a=5, b=1$

$(5-1)(1-5) = (5-1)(5-1)$

Prof A **ma115**
Assignment 1_Basics due 09/05/2022 at 08:00am EDT

Problem 1. **(1 point)** Library/FortLewis/Algebra/1-3-Equivalent-expressions/MCH1-1-3-08-Equivalent-expressions.pg

Determine whether the expressions are equivalent or not.

? 1. $(a-b)^2$ and $a^2-2ab+b^2$

? 2. $(a-b)^2$ and $(a-b)(a-b)$

? 3. $(a-b)^2$ and $(a-b)(b-a)$

? 4. $(a-b)^2$ and a^2-b^2

? 5. $(a-b)^2$ and $(b-a)^2$

Answer(s) submitted:

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-
-

(incorrect)

Problem 2. **(1 point)** Library/FortLewis/Algebra/2-1-Reordering-and-regrouping/MCH1-2-1-01-06all-Reordering-and-regrouping.pg

Determine whether the expressions are equivalent or not.

? 1. $2xy$ and $(2x)(2y)$

? 2. $5-x$ and $-x+5$

? 3. $(3x)(4y)(2x)$ and $24x^2y$

? 4. $2c+d$ and $c+2d$

? 5. $x(3x)$ and $4x$

? 6. $(x+3)(x+4)$ and $(x+3)(4+x)$

Answer(s) submitted:

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-
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(incorrect)

Problem 3. **(1 point)** Library/FortLewis/Algebra/2-3-Expanding-and-factoring/MCH1-2-3-56-Expanding-and-factoring.pg

Factor the expression $10a^3+32ab^2$. Simplify your answer as much as possible. $a(10a^2+32b^2)$

(____)(____) help (formulas)

Answer(s) submitted:

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(incorrect)

Problem 4. **(1 point)** Library/FortLewis/Algebra/2-1-Reordering-and-regrouping/MCH1-2-1-07-10all-Reordering-and-regrouping.pg

Determine whether the equations are identities.

? 1. $3b+2b^2=5b^3$

? 2. $4h^2+3h^2=7h^2$

? 3. $2AB^2+3A^2B=5A^2B^2$

? 4. $2x^2+3x^3=5x^5$

Answer(s) submitted:

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-
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(incorrect)

Problem 5. **(1 point)** Library/FortLewis/Algebra/2-3-Expanding-and-factoring/MCH1-2-3-38-Expanding-and-factoring-old.pg

Factor the expression $4n^2-16n-180$. Simplify your answer as much as possible, and put the greatest common factor in the first answer box.

___ (____)(____) help (formulas)

Answer(s) submitted:

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(incorrect)

$= 4(n^2-4n-45)$

Factoring Trinomials

- $x^2 - 7x + 12 = (x-3)(x-4)$

  ↑ leading coefficient = 1.

- $5x^2 + 7x - 6 = 5x^2 + 10x - 3x - 6$ ($-3(x+2)$)

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

  ↑ not 1 ... factor by grouping (AC-method)

$Ax^2 + Bx - C$

1. mult. AC: -30 (in Ex.)
2. decompose B: into factors of -30:

Factors of -30	Sum
$1, -30$	-29
$-1, 30$	29
$10, -3$	7

Factor By Grouping. (done on 4 terms)

$x^3 + 3x^2 + 4x + 12$

$(x^3 + 3x^2) + (4x + 12)$ ← still equivalent ★

$x^2(x+3) + 4(x+3) = (x+3)(x^2+4)$

the G.C.F b/w two pieces

similar: $(x^2 A + 4A) = A(x^2+4)$

Ex. $x^3 + 7x^2 - 4x - 28$. Factor by grouping

$= (x^3 + 7x^2) - 4(x+7)$

$x^2(x+7) - 4(x+7)$

$(x+7)(x^2-4) = (x+7)(x-2)(x+2)$

Difference of Squares

$a^2 - b^2 = (a-b)(a+b)$

(note: $a^2 + b^2$ doesn't factor)

Problem 6. **(1 point)** Library/FortLewis/Algebra/2-3-Expanding-and-factoring/MCH1-2-3-46-Expanding-and-factoring-old.pg

Factor the expression $x^2+24x+144$. Simplify your answer as much as possible.

(_____)(_____) help (formulas)

Answer(s) submitted:

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(incorrect)

Problem 7. **(1 point)** Library/FortLewis/Algebra/2-3-Expanding-and-factoring/MCH1-2-3-60-Expanding-and-factoring-old.pg

Factor the expression $(a+b)^2-81$. Simplify your answer as much as possible.

A

A^2-B^2

11

(_____)(_____) help (formulas)

Answer(s) submitted:

$B=9$

$(A-B)(A+B)$

-
-

(incorrect)

Problem 8. **(1 point)** Library/FortLewis/Algebra/2-3-Expanding-and-factoring/MCH1-2-3-02-Expanding-and-factoring.pg

Expand the expression $(y+7)(y-1)$ and combine like terms. Simplify your answer as much as possible.

_____ help (formulas)

Answer(s) submitted:

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(incorrect)

Problem 9. **(1 point)** Library/FortLewis/Algebra/2-3-Expanding-and-factoring/MCH1-2-3-44-Expanding-and-factoring-old.pg

Factor the expression x^2+17x. Simplify your answer as much as possible.

(_____)(_____) help (formulas)

Answer(s) submitted:

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(incorrect)

Problem 10. **(1 point)** Library/FortLewis/Algebra/2-3-Expanding-and-factoring/MCH1-2-3-16-Expanding-and-factoring.pg

Expand the expression $(x-y)^3$ and combine like terms. Simplify your answer as much as possible.

_____ help (formulas)

Answer(s) submitted:

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(incorrect)

Problem 11. **(1 point)** Library/FortLewis/Algebra/2-3-Expanding-and-factoring/MCH1-2-3-09-Expanding-and-factoring.pg

Expand the expression $(x-6)^2$ and combine like terms. Simplify your answer as much as possible.

_____ help (formulas)

Answer(s) submitted:

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(incorrect)

Problem 12. **(1 point)** Library/FortLewis/Algebra/2-3-Expanding-and-factoring/MCH1-2-3-12-Expanding-and-factoring.pg

Expand the expression $(x+8)(x-8)$ and combine like terms. Simplify your answer as much as possible.

_____ help (formulas)

Answer(s) submitted:

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(incorrect)

Problem 13. **(1 point)** Library/FortLewis/Algebra/2-3-Expanding-and-factoring/MCH1-2-3-06-Expanding-and-factoring.pg

Expand the expression $(a+b+c)(a+b-c)$ and combine like terms. Simplify your answer as much as possible.

_____ help (formulas)

Answer(s) submitted:

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(incorrect)

Problem 14. **(1 point)** Library/FortLewis/Algebra/2-3-Expanding-and-factoring/MCH1-2-3-68-Expanding-and-factoring.pg

Factor the expression $(r+1)^2+12t(r+1)+36t^2$. Simplify your answer as much as possible, but do not combine like factors.

_____ help (formulas)

Answer(s) submitted:

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(incorrect)

Problem 15. **(1 point)** Library/FortLewis/Algebra/2-3-Expanding-and-factoring/MCH1-2-3-30-Expanding-and-factoring-old.pg

Factor the expression $t^2-27t+50$. Simplify your answer as much as possible.

(_____)(_____) help (formulas)

Answer(s) submitted:

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(incorrect)

Factor:

$$(s+1)^2 + 8t(s+1) + 16t^2$$

Note: $(s+1)$ ← square, $(4t)$ ← square, $(4t)^2$

$$(a+b)^2 = a^2 + 2ab + b^2 \leftarrow \text{(general form)}$$

(perfect square

Ex. Expand

$$(A+B+C)(A-B+C)$$

$$A(A-B+C) + B(A-B+C) + C(A-B+C)$$

$$A^2 - AB + AC + BA - B^2 + BC + AC - BC + C^2$$

$$A^2 + 2AC - B^2 + C^2$$

Problem 16. **(1 point)** Library/FortLewis/Algebra/2-4-Algebraic-fractions/MCH1-2-4-06-Algebraic-fractions.pg

Write the expression as a single fraction. Simplify your answer.

$7z$ = common denom.

$$z+\frac{z}{7}+\frac{7}{z}=\_\_\_\_\_$$

Answer(s) submitted:

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-

(incorrect) $\left[\frac{7z^2+z^2+49}{7z}\right]$

$\left(\frac{7z}{7z}\right)z + \frac{z}{7}\left(\frac{z}{z}\right) + \frac{7}{z}\cdot\left(\frac{7}{7}\right)$

Problem 17. **(1 point)** Library/FortLewis/Algebra/2-4-Algebraic-fractions/MCH1-2-4-24-Algebraic-fractions.pg

Multiply and simplify. Assume any factors you cancel are not zero.

$$\frac{ab+b}{2b^2+18b}\cdot\frac{9a^2+18a}{a+a^2}=\_\_\_\_\_$$

Answer(s) submitted:

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(incorrect)

Problem 18. **(1 point)** Library/FortLewis/Algebra/2-4-Algebraic-fractions/MCH1-2-4-52-Algebraic-fractions.pg

Simplify the following expression. Assume any factors you cancel are not zero.

$$\frac{\frac{9}{s}+\frac{4}{t}}{st}=\_\_\_\_\_$$

Answer(s) submitted:

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(incorrect)

Problem 19. **(1 point)** Library/FortLewis/Algebra/2-4-Algebraic-fractions/MCH1-2-4-04-Algebraic-fractions.pg

Write the expression as a single fraction. Simplify your answer.

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

Answer(s) submitted:

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(incorrect)

Problem 20. **(1 point)** Library/FortLewis/Algebra/2-4-Algebraic-fractions/MCH1-2-4-60-Algebraic-fractions.pg

Simplify the following expression. Assume any factors you cancel are not zero.

$$\frac{\frac{5}{k+1}-1}{\frac{4}{k+1}+1}=\_\_\_\_\_$$

Answer(s) submitted:

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(incorrect)

Problem 21. **(1 point)** Library/FortLewis/Algebra/2-4-Algebraic-fractions/MCH1-2-4-12-Algebraic-fractions.pg

Write the expression as a single fraction. Simplify your answer.

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

Answer(s) submitted:

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-

Start

(incorrect)

Problem 22. **(1 point)** Library/FortLewis/Algebra/6-1-Exponent-rules/MCH1-6-1-78-Exponent-rules.pg

Using laws of exponents, rewrite the following expression as a product.

3^{3+4} = ___ · ___ help (numbers)

Answer(s) submitted:

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(incorrect)

Problem 23. **(1 point)** Library/FortLewis/Algebra/6-1-Exponent-rules/MCH1-6-1-90-Exponent-rules.pg

Using laws of exponents, rewrite the following expression as a quotient. help (numbers)

$$e^{t-3}(t+4) = \_\_\_\_\_$$

Answer(s) submitted:

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(incorrect)

Problem 24. **(1 point)** Library/FortLewis/Algebra/6-1-Exponent-rules/MCH1-6-1-62-Exponent-rules.pg

Rewrite the following expression without parentheses. Simplify your answer as much as possible, and assume that all variables are positive. help (formulas)

$$\left(\frac{3p}{q^9}\right)^3 = \_\_\_\_\_$$

Answer(s) submitted:

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(incorrect)

Problem 25. **(1 point)** Library/FortLewis/Algebra/6-1-Exponent-rules/MCH1-6-1-44-Exponent-rules.pg

Rewrite the following using a single exponent. help (formulas)

$\left((a+b)^2\right)^5 = (\_\_\_\_\_)^{\_\_\_\_}$

Answer(s) submitted:

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(incorrect)

Problem 26. **(1 point)** Library/FortLewis/Algebra/6-1-Exponent-rules/MCH1-6-1-40-Exponent-rules.pg

Rewrite the following using a single exponent. help (formulas)

$(x^2+y)^5(x+y^2)^5 = (\_\_\_\_\_)^{\_\_\_\_}$

Answer(s) submitted:

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(incorrect)

Problem 27. **(1 point)** Library/FortLewis/Algebra/6-1-Exponent-rules/MCH1-6-1-34-Exponent-rules.pg

Rewrite the following using a single exponent. help (formulas)

$a^7b^7 = (\_\_\_\_\_)^{\_\_\_\_}$

Answer(s) submitted:

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(incorrect)

Problem 28. **(1 point)** Library/FortLewis/Algebra/6-1-Exponent-rules/MCH1-6-1-74-Exponent-rules.pg

Select all expressions that are equivalent to $\frac{3^n}{2^n}$. There may be more than one correct answer.

- A. $-\left(\frac{3}{2}\right)^n$
- B. $\frac{2^{-n}}{3^{-n}}$
- C. $\left(\frac{2}{3}\right)^{-n}$
- D. $\left(\frac{3}{2}\right)^n$
- E. $\left(\frac{1}{\frac{2}{3}}\right)^n$
- F. $(1.5)^n$

Answer(s) submitted:

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(incorrect)

Problem 29. **(1 point)** Library/FortLewis/Algebra/6-1-Exponent-rules/MCH1-6-1-38-Exponent-rules.pg

Rewrite the following using a single exponent. help (formulas)

$A^{n+7}B^nB^7 = (\_\_\_\_\_)^{\_\_\_\_}$

Answer(s) submitted:

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(incorrect)

Problem 30. **(1 point)** Library/FortLewis/Algebra/6-1-Exponent-rules/MCH1-6-1-50-Exponent-rules.pg

Without a calculator, determine whether the following quantities are positive or negative.

1. $(-75)^{74}$
2. $(-93)^0$
3. -13^{-22}
4. 47^{-1}
5. $(-97)^{-55}$

Answer(s) submitted:

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(incorrect)

Problem 31. **(1 point)** Library/FortLewis/Algebra/6-2-Fractional-exponents/MCH1-6-2-14-Fractional-exponents.pg

Write the expression as an equivalent expression in the form x^n. Simplify your answer as much as possible, and enter your answer as a fraction.

$\sqrt[3]{x^{10}} = x^n$ for $n =$ _____ help (fractions)

Answer(s) submitted:

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(incorrect)

Problem 32. **(1 point)** Library/FortLewis/Algebra/6-2-Fractional-exponents/MCH1-6-2-04-Fractional-exponents.pg

Evaluate the following expression without using a calculator. Simplify your answer as much as possible, and enter your answer as a fraction.

$\left(\frac{64}{8}\right)^{-1/3} =$ _____ help (fractions)

Answer(s) submitted:

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(incorrect)

Problem 33. **(1 point)** Library/FortLewis/Algebra/6-2-Fractional-exponents/MCH1-6-2-24-Fractional-exponents.pg

Combine radicals, if possible. Simplify your answer as much as possible.

$8\sqrt{12t^3} + 3t\sqrt{128t} - 3t\sqrt{48t} = \left(\ \_\_\_\_\_\ \right)\sqrt{2t} + \left(\ \_\_\_\_\_\ \right)\sqrt{3t}$ help (formulas)

Answer(s) submitted:

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(incorrect)

Problem 34. **(1 point)** Library/FortLewis/Algebra/6-2-Fractional-exponents/MCH1-6-2-10-Fractional-exponents.pg

Simplify the following expression as much as possible. Assume that all variables are positive.

$\frac{\sqrt[3]{125x^{10}y^7}}{\sqrt[3]{27x^4y}} =$ _____ help (formulas)

Answer(s) submitted:

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(incorrect)

Problem 35. **(1 point)** Library/FortLewis/Algebra/1-3-Equivalent-expressions/MCH1-1-3-14c-Equivalent-expressions.pg

Determine whether the expressions are equivalent or not.

? 1. $\sqrt{x^4+81}$ and $(x^4+81)^{1/2}$

? 2. $\sqrt{x^4+81}$ and $(x+3)^2$

? 3. $\sqrt{x^4+81}$ and $(x^4+81)^{0.5}$

? 4. $\sqrt{x^4+81}$ and $x+3$

? 5. $\sqrt{x^4+81}$ and x^2+9

Answer(s) submitted:

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(incorrect)