

MTH 28.5 LECTURE NOTES (Ojakian)

Topic 5: Algebra - Evaluation and Simplifying

OUTLINE

References (1.2, 1.3)

1. Evaluating Algebraic Expressions
 2. Simplifying
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1. Algebra?

Question. *What is Algebra?*

Example: Convert from Celsius to Fahrenheit

PROBLEM 1. *Convert 10° Celsius to Fahrenheit using the verbal procedure.*

(a) Verbally:

- i. Multiply the Celsius temperature by $\frac{9}{5}$
- ii. Then add 32

(b) With “algebraic expression”: $C \cdot \frac{9}{5} + 32$

(c) Advantages of algebraic expression

- i. More concise
- ii. Have mathematical rules for working with algebraic expressions

(d)

PROBLEM 2. *Convert 10° Celsius to Fahrenheit using the formula.*

(e) Recall area of rectangle and triangle. Write using algebra and do some examples.

2. Evaluating algebraic expressions

(a) Plug in the given numbers for the variables

(b) Evaluate and simplify

PROBLEM 3.

i. $4x$ if $x = 2$

ii. $4x$ if $x = 3$

iii. $4x$ if $x = -3$

iv. $2a + b$ if $a = 1, b = 1$

v. $2a + b$ if $a = -1, b = -2$

vi. x^2 if $x = 4$

vii. x^2 if $x = -4$

viii. x^3 if $x = -4$

ix. $x^2 + y^2$ if $x = 3, y = 1$

x. $x^2 - y^2 + 2$ if $x = -7, y = 0$

PROBLEM 4.

i. $4x$ if $x = \frac{1}{2}$

ii. $4x$ if $x = 0.5$

iii. $4x$ if $x = -\frac{1}{2}$

iv. $2a - b$ if $a = \frac{1}{4}, b = \frac{3}{2}$

v. $2a - b$ if $a = -1, b = -\frac{3}{2}$

vi. x^2 if $x = \frac{2}{5}$

vii. x^2 if $x = -\frac{2}{5}$

viii. $x^2 + y^2$ if $x = \frac{3}{2}, y = 1$

ix. $x^2 - y^2 + \frac{7}{10}$ if $x = -\frac{3}{4}, y = \frac{1}{2}$