

Notes to remember for Alg1H Final Exam.

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Unit One : Set Theory

N=Naturals W=Wholes Z=Integers Q=Rationals I=Irrationals R=Reals

These are all considered sets

Equivalent is when two sets have the same CARDINALITY (n), Equal sets are when they have the exact same ELEMENTS

Power set is represented with P().

Example: $A = \{a, b, c\}$. $P(A) = \{\emptyset, \{a\}, \{b\}, \{c\}, \{a, b\}, \{a, c\}, \{b, c\}, \{a, b, c\}\}$ so $n(P(A)) = 8$

Roster notation is the set builder function executed. An example would be $\{1, 3, 5, 7\}$ from $\{2x+1 | x \text{ element of } R\}$

Cardinality of N, W, Z, and Q are all aleph null, the basic level of infinity. I and R are aleph one.

Unit Two : Mathematical Systems

A group must be

Closed: No other numbers than the ones provided.

Associative: It is associative with functions.

Inverse: There is at least one identity element (e) in each row.

Identity: There is an identity element (e).

Unit Four : Functions

A function has an input and output.

Unit 5 : Linear systems

For distance and age questions, if stuck use a table. This also applies to wind & water.

Distance = $d=rt$.

Unit 6 : Exponents

When solving for exponential value X, convert the bases to the same before removing. Then solve such as a equation.

When it comes down to a fractional exponent, the denominator is always the root, the numerator is the exponent. An example would be,

$64^{2/6}$ will become $(6 \text{ root } 64)^2$ will become $(2)^2$ will become (4) .

Unit 7 : Polynomials

There are monomials, binomials, trinomials, and more. Polynomials refer unlike terms so a binomial would be two (bi) unlike terms such as $X^2 + 4X$. Terms have degrees but constants do not. $4X^2Y^3$ would have a degree of 5 but, 4 will have a degree of zero as $4=4x^0$.

Reference Sheet for Dividing Polynomials.

Unit 8 : Sequences and Series

There are two types of sequences (an ordered enumeration of numbers), either Arithmetic or Geometric. Arithmetic is addition between terms while Geometric is multiplication between terms.

[$A_{(n)} = a_{(1)} + (n-1)d$] for Arithmetic sequences.

[$A_{(n)} = a_{(1)} \times r^{(n-1)}$] for Geometric sequences.

*n= the number place the number is in a sequence.

Other notes

Always remember to add your small number base of root when it comes to bases and radicals.

i= imaginary= root -1. This will be used in bases and in radicals.

Quad Form = $-b \pm \sqrt{b^2 - 4ac} / 2a$.