Linear Algebra and Geometry 1

Systems of equations, matrices, vectors, and geometry

Rules for computations with real numbers

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Commutative law

$$a + b = b + a$$

$$ab = ba$$

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Associative law

$$a + (b + c) = (a + b) + c$$

$$a(bc) = (ab)c$$

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Distributive law

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b
c

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The neutral element

$$a + 0 = a$$

 $a \cdot 1 = a$

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Zero-product property

$$ab = 0 \Rightarrow (a = 0 \lor b = 0)$$

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Zero-product property

$$ab = 0 \Rightarrow (a = 0 \lor b = 0)$$

Cancellation property

$$(ab = ac \land a \neq 0) \Rightarrow b = c$$

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$$2x = 2y \Rightarrow x = y$$

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Cancellation property

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The inverse element

$$a + (-a) = 0$$

$$a \cdot a^{-1} = 1 \quad (a \neq 0)$$