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| --- | --- | --- |
| Algebra  **Algebra**  [​ R1: Algebra Properties 5](#__RefHeading___Toc30_2696807248)  [​ 8.2: Matrices and Matrix 7](#__RefHeading___Toc174_829349542) | | |
| **R1: Algebra** Properties  |  |  | | --- | --- | | **Properties in Mathematics** | | | **Name of Property** | **In Algebra** | | Commutative | a + b = b + a  a · b = b · a | | Associative | a + (b + c) = (a + b) +c = a + b +c  a · (b · c) = (a · b) ·c = a · b · c | | Distributive | a·(b + c) = a · b + a · c  (a + b) ·c = a ·c + b ·c | | Identity | 0 + a = a + 0 = a  a · 1 = 1 · a = a | | Additive Inverse | a + (- a) = 0  -a +a = 0 | | Multiplicative Inverse | a · = · a =1 if a ≠ 0 | | Multiplication by Zero | a · 0 = 0 | | Division | = 0 = 1 if a ≠ 0 | | Cancellation | ac =bc implies a = b if c ≠ 0  if b ≠ 0, c ≠ 0 | | Zero-product | If ab=0, then a = 0, or b = 0, or both | | Difference | a – b = a + (- b) | | | |
| **Rules of Signs** | | |
| a (-b) = - (ab) | (-a) b = - (ab) | (-a)(-b) = ab |
| -(-a) = a |  |  |
| **Arithmetic of Quotients** | | |
| if b ≠ 0 | | |
| if b ≠ 0, d ≠ 0 | | |
| if b ≠ 0, d ≠ 0 | | |
| if b ≠ 0, c ≠ 0, d ≠ 0 | | |

# 8.2: Matrices and Matrix









