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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Basic Outline of Universal Algebra | | | | | | | | | | | | | | | | | | | | | | |
| Structure | Set 1 | | | | | | | | |  | | | | Set 2 | | | | | | | | |
| Op 1 | | | |  | Op 2 | | | | Action | | | | Op 1 | | | |  | Op 2 | | | |
| A | Id | In | C | D | A | Id | In | C | D1-1 | D’1-2 | D2-1 | D’2-2 | A | Id | In | C | D | A | Id | In | C |
| Magma |  |  |  | b |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Semigroup | x |  |  | b |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Monoid | x | x |  | b |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Group** | x | x | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Abelian Group | x | x | x | x |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Ring** | x | x | x | x | x | x |  |  | b |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Unitary Ring | x | x | x | x | x | x | x |  | b |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Division Ring | x | x | x | x | x | x | x | x | b |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Field** | x | x | x | x | x | x | x | x | x |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Module | x | x | x | x |  |  |  |  |  | x |  | x | x | x | x | x | x | x | x |  |  |  |
| **Vector Space** | x | x | x | x |  |  |  |  |  | x |  | x | x | x | x | x | x | x | x | x | x | x |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Algebra** | x | x | x | x | x | x |  |  |  | x | x | x | x | x | x | x | x | x | x | x | x | x |