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**MATH 240 – Assignment 1**

**1. a.** Contingency.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| T | T | T | F | F |
| T | F | T | F | F |
| F | T | T | T | T |
| F | F | F | T | T |

**b.** Tautology.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
| T | T | T | T | T | T | T | T |
| T | T | F | T | F | F | F | T |
| T | F | T | F | F | F | T | T |
| T | F | F | F | T | F | F | T |
| F | T | T | F | T | F | F | T |
| F | T | F | F | F | F | T | T |
| F | F | T | T | F | F | F | T |
| F | F | F | T | T | T | T | T |

**c.** Contradiction.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| T | T | F | F | F |
| T | F | T | F | F |
| F | T | T | T | F |
| F | F | F | T | F |

**2. a.**

|  |  |  |
| --- | --- | --- |
|  |  | implies  distributive  complement  identity  implies  complement  identity |

**b.**

|  |  |  |
| --- | --- | --- |
|  |  | DeMorgan’s, implies  distributive  complement  identity |

**c.**

|  |  |  |
| --- | --- | --- |
|  |  | distributive, associative  idempotent  distributive  complement  identity  DeMorgan’s |

**3. a.** True.

is an integer if and only if is a vowel

is an integer is a vowel

**b.** False.

whenever

**c.** True.

If (a) implies (b), then pigs cannot fly

pigs cannot fly

**4. a.**

Players only love you when they’re playing.

**b.**

**c.**