CW 03A solutions

1. $\{4 + 5x \mid x \in \mathbb{N}\}$

$5(0) + 4 = 1, \quad 5(1) + 4 = 9, \ldots$

2. $\{3, 5, 7, 9, \ldots\}$

$2(0) + 3 = 3, \quad 2(1) + 3 = 5, \ldots$

3. $A = \{1, 2\}, \quad B = \{1\}$

$A \cup B = A \quad$ but $\quad B \neq \emptyset$

4. $f: \mathbb{Z} \to \mathbb{Z}, \quad f(x) = 5x$

one-to-one $\quad f(x) = f(y)$

$\to \quad 5x = 5y$

$\to \quad x = y$

not onto

no $x \in \mathbb{Z}$ exists for $f(x) = 1$

CW 03B solutions

1. $\{5 + 6x \mid x \in \mathbb{N}\}$

$6(0) + 5 = 5, \quad 6(1) + 5 = 11, \ldots$

2. $\{4, 7, 10, 13, \ldots\}$

$3(0) + 4 = 4, \quad 3(1) + 4 = 7, \ldots$

3. $A = \{1, 2\}, \quad B = \{3\}$

$A - B = A \quad$ but $\quad B \neq \emptyset$

4. $f: \mathbb{R} \to \mathbb{R}, \quad f(x) = 3x$

one-to-one

$f(x) = f(y)$

$\to \quad 3x = 3y$

$\to \quad x = y$

onto

if $f(x) = 3x = y$

then $x = y/3 \in \mathbb{R}$