Hoja de trabajo # 3

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1 Ejercicio # 1

1. $(a = d)$ $a := \{1, 2, 4, 8, 16, 32, 64\} = d := \{n \in \mathbb{N} \mid \exists i \in \mathbb{N} \ . \ n = 2^i \wedge n < 100\}$
2. $(b = f) b := \{n \ \in \mathbb{N} \mid \exists x \in \mathbb{N} \ . \ x = n/5\} = f := \{n \in \mathbb{N} \mid \exists x \in \mathbb{N} \ . \ n = x + x + x + x + x\}$
3. $(c = e) c := \{n \in \mathbb{N} \mid \exists x \in \mathbb{N} \ . \ n = x * x\} = e := \{n \in \mathbb{N} \mid \exists x \in \mathbb{N} \ . \ x = \sqrt{n}\}$

2 Ejercicio #2

1. $a := \{n \in \mathtt{N} \mid \exists x \in \mathtt{N} x = n/15\}$
2. $c := \{n \in \mathtt{N} \mid \exists x \in \mathtt{N} x = n/5 \wedge x = n/4\}$
3. $d := \{a \forall \ 1 < x < a \ . \ a \ mod(x) \neq 0\}$
4. $b := \{a \mid a \subset P(\mathtt{N}) \mid \exists x \in \mathtt{N} \ . \ x/15 \ . \ \exists n \subset a \ . \ x = n/15\}$
5. $d := \{b \mid b \subset P(\mathtt{N}) \mid \exists x \in \mathtt{N} \ . \ x + x = 42\}$

3 Ejercicio #3

$S := \{(a, b, c) | a mod(2) \equiv 0, b mod(2) \equiv 0, a \neq b, c = a \otimes b, c \geq 30\}$

4 Ejercicio #4

1. $\lambda x \in \mathbb{N}. x + x = \{< x, x + x > | x \in \mathbb{N}\}$
2. $\lambda x \in \mathbb{N}. true = \{< x, true > | x \in \mathbb{N} \wedge x/5\} \bigcup \lambda x \in \mathbb{N}. false = \{< x, false > | x \in \mathbb{N} \wedge \neg(x/5)\}$
3. f $\circ g \in P(\mathbb{N})$
4. $\lambda x \in \mathbb{N}. f(gx) = \{< x, f(gx) > | x \in \mathbb{N} \wedge f(x) \in \mathbb{N} \wedge g(x) \subset f(x)\}$

Ejercicio #5

(a) $f(x) = x^2$ surjectiva

(b) $g(x) = \frac{1}{cos(x-1)}$ injectiva

(c) $h(x) = 2x$ bijectiva

(d) $w(x) = x + 1$ bijectiva