2.6.2 $\quad D = \mathbb{R}, \quad V = \mathbb{R}$

a) $(a-1)x = a+1$

(i) $a = 1$:

$0 = 2 \qquad S_1 = \emptyset$

(ii) $a \neq 1$: $\qquad S_a = \left\{ \frac{a+1}{a-1} \right\}$

b) $nx - x = n^2 - 1$

$(n-1)x = n^2 - 1$

(i) $n = 1$:

$0 = 0 \qquad S_1 = \mathbb{R}$

(ii) $n \neq 1$:

$$x = \frac{n^2 - 1}{n - 1}$$

$$x = \frac{(n+1)\cancel{(n-1)}}{\cancel{n-1}}$$

$x = n+1 \qquad S = \{n+1\}$

c) $mx - x = m^2 - 16$

$(m-1)x = (m-4)(m+4)$

(i) $m = 1$: $\qquad S_1 = \emptyset$

(ii) $m \neq 1$: $\qquad S = \left\{ \dfrac{m^2-16}{m-1} \right\}$

d) $a^2x - x = a - 1$

$(a^2-1)x = a-1$

$(a-1)(a+1)x = a-1$

(i) $a = 1$:

$0 = 0 \qquad S_1 = \mathbb{R}$

(ii) $a = -1$:

$0 = -2 \qquad S_{-1} = \emptyset$

(iii) $a \neq 1,\ a \neq -1$:

$$x = \frac{\cancel{a-1}}{\cancel{(a-1)}(a+1)} = \frac{1}{a+1}$$

$$S = \left\{ \frac{1}{a+1} \right\}$$

e) $$x = \frac{b^2-1}{b^2+1}$$ aucune condition

$$S = \{ (b^2-1)/(b^2+1) \}$$

f) $$4a^2x - x = 2a + 1$$

$$(4a^2 - 1)x = 2a + 1$$

$$(2a+1)(2a-1)\,x = 2a + 1$$

(i) $a = \frac{1}{2}$:

$$0 = 2$$

$$S_{1/2} = \emptyset$$

(ii) $a = -\frac{1}{2}$:

$$0 = 0 \qquad S_{-1/2} = \mathbb{R}$$

(iii) $a \notin \{\pm 1/2\}$

$$x = \frac{1}{2a-1} \qquad S = \{1/(2a-1)\}$$

g) $2ax + 1 = 4a^2 + x$

$$2ax - x = 4a^2 - 1$$

$$(2a-1)x = (2a-1)(2a+1)$$

(i) $a = \frac{1}{2}$:

$$0 = 0 \qquad S_{1/2} = \mathbb{R}$$

(ii) $a \neq \frac{1}{2}$

$$x = \frac{\cancel{(2a-1)}(2a+1)}{\cancel{2a-1}}$$

$$x = 2a+1$$

$$S = \{2a+1\}$$

h) $(a+b)x + (b-a)x = 4b$

$$(a+b+b-a)x = 4b$$

$$2bx = 4b$$

$$bx = 2b$$

(i) $b = 0$:

$$0 = 0 \qquad S_{(a,0)} = \mathbb{R}$$

(ii) $b \neq 0$:

$$x = 2 \qquad S_{(a,b)} = \{2\}$$

i) $(2-a+b)x = bx \cancel{-2b} + 2x \cancel{+2b} - 6$

$$\cancel{2x} - ax \cancel{+bx} \cancel{-bx} \cancel{-2x} = -6$$

$$-ax = -6$$

$$ax = 6$$

(i) $a = 0$:

$$0 = 6 \qquad S_{(0,b)} = \emptyset$$

(ii) $a \neq 0$:

$$x = b/a \qquad \mathcal{L}_{(a,b)} = \{b/a\}$$