|                            |            |                  |                            |                 | time<br>origin |              |              |       | current<br>value |      |
|----------------------------|------------|------------------|----------------------------|-----------------|----------------|--------------|--------------|-------|------------------|------|
| Time                       |            | t                | <br>-2T                    | -T              | 0              | T            | 2 <i>T</i>   | ••••• | kТ               | •••• |
| continuous<br>signal v     | general    | v(t)             | <br>v(-2T)                 | v(-T)           | v(0)           | v(T)         | v(2T)        | ••••• | v(kT)            | •••• |
|                            | restricted | v(t)             | <br>0                      | 0               | v(0)           | v(T)         | v(2T)        | ••••• | v(kT)            | •••• |
| Index                      |            | k                | <br>-2                     | -1              | 0              | 1            | 2            | ••••• | k                | •••• |
| digital<br>signal <i>v</i> | general    | $\{v_k\}$        | <br><i>v</i> <sub>-2</sub> | $v_{-1}$        | $\nu_0$        | $v_1$        | $v_2$        | ••••• | $v_k$            | •••• |
|                            | restricted | $\{v_k\}$        | <br>0                      | 0               | $\nu_0$        | $v_1$        | $v_2$        | ••••• | $v_k$            | •••• |
| forward shift $\Delta v$   | general    | $\{\Delta v_k\}$ | <br>$\Delta v_{-2}$        | $\Delta v_{-1}$ | $\Delta v_0$   | $\Delta v_1$ | $\Delta v_2$ | ••••• | $\Delta v_k$     | •••• |
|                            | general    | $\{v_{k+1}\}$    | <br>$v_{-1}$               | $\nu_0$         | $v_1$          | $v_2$        | $v_3$        |       | $v_{k+1}$        |      |
|                            | restricted | $\{v_{k+1}\}$    | <br>0                      | 0               | $v_1$          | $v_2$        | $v_3$        |       | $v_{k+1}$        | •••• |
| backward shift $\nabla v$  | general    | $\{\nabla v_k\}$ | <br>$\nabla v_{-2}$        | $\nabla v_{-1}$ | $ abla v_0$    | $\nabla v_1$ | $\nabla v_2$ | ••••• | $\nabla v_k$     | •••• |
|                            | general    | $\{v_{k-1}\}$    | <br><i>v</i> <sub>-3</sub> | $v_{-2}$        | $v_{-1}$       | $\nu_0$      | $v_2$        |       | $v_{k-1}$        | •••• |
|                            | restricted | $\{v_{k-1}\}$    | <br>0                      | 0               | 0              | $v_0$        | $v_2$        |       | $v_{k-1}$        |      |