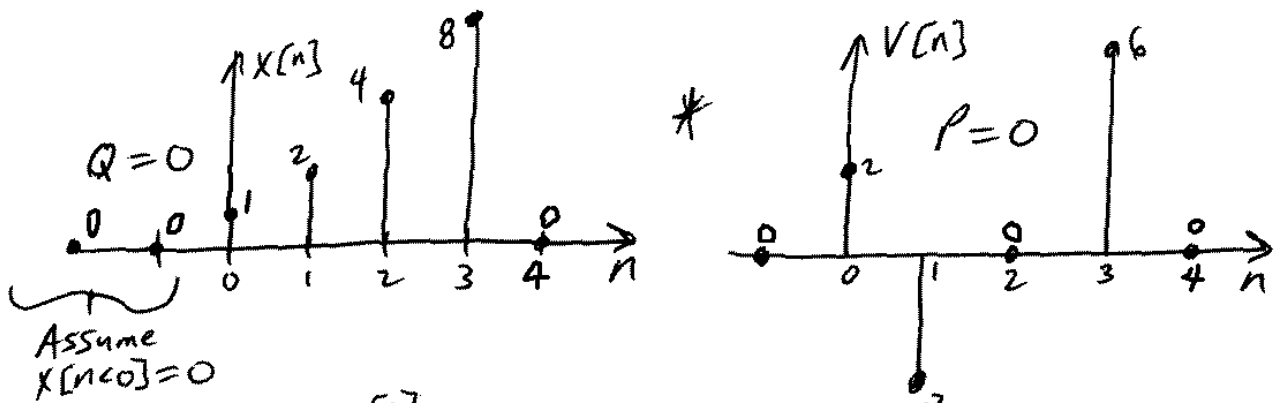**2.8** For the discrete-time signals $x[n]$ and $v[n]$ given in each of the following parts, compute the convolution $x[n]*v[n]$ for $n \geq 0$

    (c) $x[n] = 2^n$ for $n \leq 3$ and $x[n] = 0$ for $n \geq 4$; $v[0] = 2$, $v[1] = -3$, $v[2] = 0$, $v[3] = 6$, $v[n] = 0$ for all other integers n.

$Q = 0$

Assume $x[n<0] = 0$

$P = 0$

$P + Q = 0 + 0$
$\qquad = 0$

$\leftarrow x[0]$			
1	2	4	8

$v[0] \rightarrow 2$ 2   4   8   16

-3 -3 -6 -12 -24

0 0 0 0 0

6 6 12 24 48
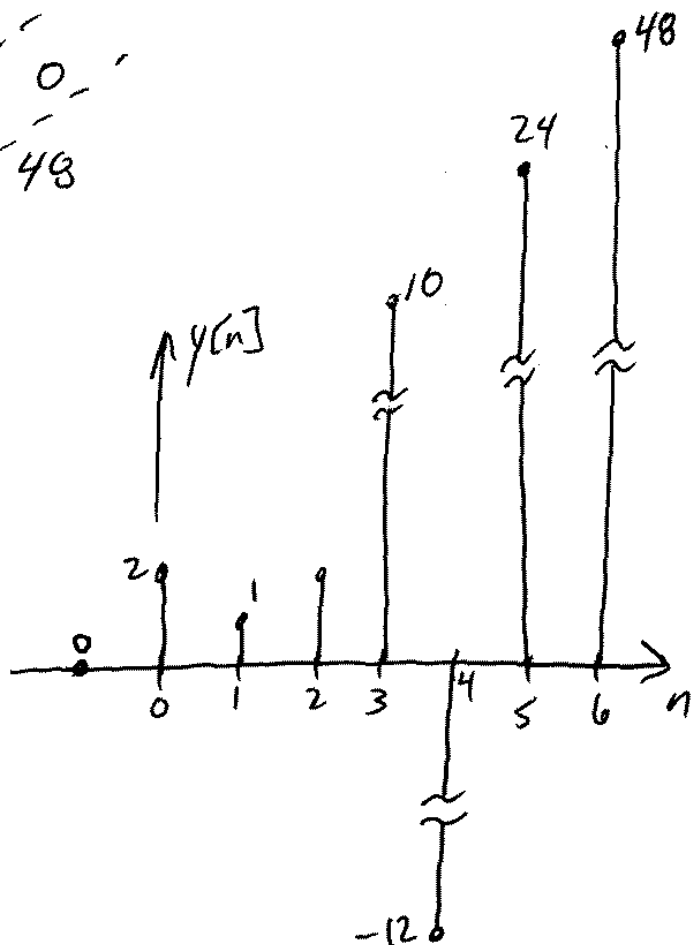
Let $y[n] = x[n] * v[n]$

$y[0] = 2$

$y[1] = -3 + 4 = 1$

$y[2] = 0 - 6 + 8 = 2$

$y[3] = 6 + 0 - 12 + 16 = 10$

$y[4] = 12 - 24 = -12$
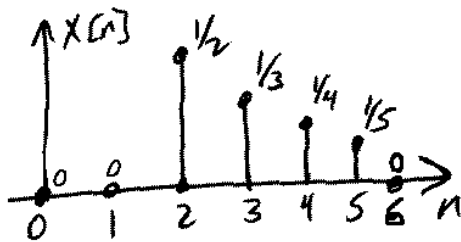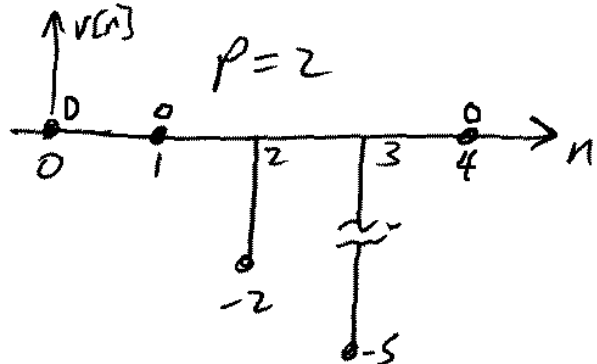
$y[5] = 24 + 0 = 24$

$y[6] = 48$

2.8 For the discrete-time signals $x[n]$ and $v[n]$ given in each of the following parts, compute the convolution $x[n]*v[n]$ for $n \geq 0$

(d) $x[n] = 1/n$ for $2 \leq n \leq 5$ and $x[n] = 0$ for all other integers n; $v[2] = -2$, $v[3] = -5$, $v[n] = 0$ for all other integers n.

$$Q = 2$$

$$P = 2$$

$$
\begin{array}{c|cccc}
 & \frac{1}{2} & \frac{1}{3} & \frac{1}{4} & \frac{1}{5} \\
\hline
-2 & -1 & -\frac{2}{3} & -\frac{1}{2} & -\frac{2}{5} \\
-5 & -\frac{5}{2} & -\frac{5}{3} & -\frac{5}{4} & -1
\end{array}
$$

$$P + Q = 2 + 2 = 4$$

$$y[4] = -1$$
$$y[5] = -\frac{5}{2} - \frac{2}{3} = -3.1\overline{6}$$
$$y[6] = -\frac{5}{3} - \frac{1}{2} = -2.1\overline{6}$$
$$y[7] = -\frac{5}{4} - \frac{2}{5} = -1.65$$
$$y[8] = -1$$

$$y[n<4 \ + \ n>8] = 0$$