$x(n) = u(n) - u(n-6)$

$h(n) = (0.8)^n u(n)$

$$y(n) = \sum_{k=0}^{5} (1)(0.8)^{(n-k)} u(n-k) = 0.8^n \sum_{k=0}^{5} 0.8^{-k} u(n-k)$$

Case I if $n < 0$ $\quad u(n-k) = 0, \quad 0 \le k \le 5$

hence $\quad y(n) = 0$

Case II $\quad 0 \le n \le 5 \quad u(n-k) = 1, \quad 0 \le k \le n$

$$y(n) = 0.8^n \sum_{k=0}^{n} 0.8^{-k}$$

$$= 0.8^n \frac{1 - 0.8^{-(n+1)}}{1 - 0.8^{-1}} = 5\left(1 - 0.8^{n+1}\right), \quad 0 \le n \le 5$$

Case III $\quad n \ge 5, \quad u(n-k) = 1, \quad 0 \le k \le 5$

$$y(n) = 0.8^n \sum_{k=0}^{5} 0.8^{-k}$$

$$= 0.8^n \frac{1 - 0.8^{-6}}{1 - 0.8^{-1}} = 5 \cdot 0.8^{n-5}\left(1 - 0.8^6\right), \quad n \ge 5$$