

5.5 a) In safe scaling, we shall have  $S \leq 1$ .

$$S = \sum_{n=-\infty}^{\infty} h(n) = a_0 + a_1 + a_2 + a_1 + a_0$$

The new scaled values are:  $a_0/S$ ,  $a_1/S$ , and  $a_2/S$ .

b) In  $L_2$ -norm scaling, we shall have  $S \leq 1$ , where

$$S = \sum_{n=-\infty}^{\infty} h(n)^2 = a_0^2 + a_1^2 + a_2^2 + a_1^2 + a_0^2$$

Let  $c = \sqrt{S}$ . The new values are:  $a_0/c$ ,  $a_1/c$ , and  $a_2/c$ .