SICP: Ex. 2.9, p. 95

Addition

Given:

$$a = 1, w_a = 0.1, a = [0.9; 1.1] \tag{1}$$
$$b = 2, w_b = 0.2, b = [1.8; 2.2] \tag{2}$$
$$c_l = 0.9 + 1.8 = 2.7 \tag{3}$$
$$c_u = 1.1 + 2.2 = 3.3 \tag{4}$$
$$w_c = \frac{c_u - c_l}{2} = \frac{3.3 - 2.7}{2} = \frac{0.6}{2} = 0.3 \tag{5}$$
$$w_c = w_a + w_b = 0.1 + 0.2 = 0.3 \tag{6}$$

Same width, switched values:

$$p = 2, w_p = 0.1, p = [1.9; 2.1] \tag{7}$$
$$q = 1, w_q = 0.2, q = [0.8; 1.2] \tag{8}$$
$$r_l = 1.9 + 0.8 = 2.7 \tag{9}$$
$$r_u = 2.1 + 1.2 = 3.3 \tag{10}$$
$$w_r = \frac{r_u - r_l}{2} = \frac{3.3 - 2.7}{2} = \frac{0.6}{2} = 0.3 \tag{11}$$
$$w_r = w_p + w_q = 0.1 + 0.2 = 0.3 \tag{12}$$

For addition, only the width matters, not the actual numbers.

Multiplication

TODO: same examples, different results