

**tec 2.** Assume that you have a box of resistors that have a Gaussian distribution of resistances with mean  $\mu = 100 \Omega$  and standard deviation  $\sigma = 20 \Omega$  (i.e., 20% resistors). Suppose that you wish to form a subgroup of resistors with  $\mu = 100 \Omega$  and standard deviation  $5 \Omega$  (i.e., 5% resistors) by selecting all resistors with resistance between the two limits  $r_1 = \mu - a$  and  $r_2 = \mu + a$ . (Apparently, you are too cheap to just order the resistors with the appropriate resistance tolerance from Mouser.)

- (a) Find the value of  $a$ .
- (b) What fraction of resistors should satisfy the condition?
- (c) Find the standard deviation of the remaining sample.