Session 2: Post Class Test Solutions

1. e. All of the above. Sampling is less expensive, more timely, and sometimes the only feasible option. If there is no sampling bias, and the sample size is large, you can extrapolate fairly precisely from sampling findings to the population.
2. d. None of the above. Each approach creates its own biases. Picking the 500 largest or most liquid companies in the market will create obvious bias, coming from the criteria used. Picking only from companies that have information available for ten years will bias you towards older, most established companies. The sample drawing ten companies from each of 50 industries is closest to random, but it too creates biases, because there are very different numbers of firms in each industry. If one industry grouping has only 20 firms, and another has 200 firms, picking ten firms from each will overweight the first grouping.
3. The sampling bias comes from multiple sources:
    a. The starting point for your sampling, the 1000 portfolio managers, is itself a sample, and may not be representative of the population of all portfolio managers, many of whom may not work for mutual funds. (They may manage pension funds and endowments, and may have very different views)
    b. There is a response bias. The 100 portfolio managers who responded may be the ones with the strongest views on the market, thus skewing the results.
4. Average annual return = 12%
   Standard deviation in annual returns = 30%
   Standard error = 30%/ $\sqrt{25}$ = 6%
   Annual Return, with 95% confidence interval = $12\% \pm 2\ (6\%) = 0\%\ to\ 24\%$
5. c. The sample observations have to be independent and drawn from identical distributions. Independence means that the observations cannot be correlated with each other, and they all have to come from the same distribution (type and parameters), but that distribution does not have to be normal.