

157. Let  $X_1, \dots, X_n$  be IID normal( $\theta, \sigma^2$ ), where  $\sigma^2$  is known. A 95% confidence interval for the mean is  $\bar{x} \pm 1.96\sigma/\sqrt{n}$ . Let  $p$  denote the probability that an additional observation  $X_{n+1}$  will fall in this interval. Is  $p$  greater than, less than, or equal to 0.95? Prove your answer.