

Stat 345 Answers to the Practice Problems for the Final Exam

1. False, False, True, False, False
2. (a) (a) Not covered for exam.
(b) (b) $X = \text{No. of Defectives}$. $X \sim \text{Bin}(20, p = 0.35)$, $P(X < 10) = 0.8782$.
3. (a) $c = 1/6$.
(b) 0.7917
(c) 1.4
(d) 0.26
(e) $F(x) = 0$, if $x < 0$. $F(x) = (1/6)(x^4/4 + x)$, if $0 \leq x \leq 2$. $F(x) = 1$, $x > 2$.
(f) $E(Y) = 0.8$ and $\text{Var}(Y) = 2.34$.
4. (a) $P(X < 1) = 0.1587$.
(b) $x^* = 1.456$
5. (a) $E(\bar{X}) = 1.0$.
(b) $\text{Var}(\bar{X}) = \sigma^2/n = 1/70 = 0.0143$.
(c) \bar{X} is approximately a $N(1, 0.0143)$.
(d) 0.4525
6. (a) $23.56 \pm 1.96 \frac{12.52}{\sqrt{50}} = (20.09, 27.03)$
(b) With 95% confidence the mean number of can openers sold by ALL the stores in the region is between 20.09 and 27.03.
7. (a) $X \sim \text{Bin}(n = 300, p = 0.21)$
(b) Not covered for test.
(c) X approx. a $N(63, 49.77)$. The probability is 0.0446.
8. (a) $f(x) = 1/6$ for $x = 1, 2, 3, 4, 5, 6$
(b) $E(X) = 3.5$, $\text{Var}(X) = 2.9167$
(c) $P(Y > 3) = 0.8238$