

Math 365 Exam 2 Review Problem Answers

1. (a) i. Uniform (discrete)
ii. $\mu = 3; \sigma^2 = 2$
- (b) i. Geometric
ii. $\mu = 10; \sigma^2 = 90$
2. (a) $M(t) = \frac{e^{-t}}{1-t}$
- (b) $\mu = 0$ (Hint: integrate by parts)
- (c) $\sigma^2 = 1$
- (d) $F(x) = 1 - e^{-x-1}$
- (e) $P(X \leq 2) = 0.95$
- (f) $\pi_{25} = -0.7123$.
3. (a) 45
- (b) 0.224 (Poisson $\lambda = 7.5$)
- (c) 0.713 (Exponential $\theta = 4$)
- (d) 0.544 (Gamma $\theta = 4; \alpha = 3$)
4. $g(y) = \frac{1}{4\sqrt{y}}e^{-\sqrt{y}/2} \quad 0 \leq y < \infty$
5. $c = \frac{3}{2}$
6. $\mu = 2$
7. $a = 2.733$
8. 0.083
9. (a) 96
- (b) $e^{-8/5} = 0.202$ (Exponential $\theta = 5$)
- (c) 0.323 (Gamma $\theta = 5; \alpha = 3$)
- (d) 0.228 (Poisson $\lambda = 12$)
- (e) 0.182 ($X \sim b(8, 0.228)$)
10. (a) $f_1(y) = 4y^3$
- (b) $\mu_Y = 4/5$
- (c) $\mu_Y = 4/5$
- (d) $P(X < 1/2) = 0.4375$
- (e) Dependent ($f_1(x)f_2(y) \neq f(x, y)$)
11. 1 ($X \sim b(5, 0.202)$)