Answers

1. $E(X) = 1.9, \quad Var(X) = .69$

2. $1 - x^3 + x^6 - x^9 + x^{12}$

3. $e^{-.6}$

4. .0668

5. .2417

6. (a) $f(x) = 3x^2 \geq 0$ for all x and $\int_0^1 3x^2 \, dx = 1$.

6. (b) $E(X) = 3/4$

6. (c) $(.6)^3 - (.3)^3 = .189$

7. $e + e(x - 1) + \dfrac{e}{2}(x - 1)^2 + \dfrac{e}{6}(x - 1)^3$

8. $\dfrac{1}{.24} = 4.167$

9. $\dfrac{23}{99}$

10. Take $f(x) = 1/x^2$. Since

$$\int_1^\infty \frac{1}{x^2} \, dx = -\frac{1}{x}\Big|_1^\infty = 1$$

(so the integral converges), the sum converges.

11. $x_1 = 2.5$

12. $1 - e^{-10}$

13. (a) 96   (b) .000008   (c) 7/6