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White

ISYE3232A Quiz 1 - Fall 2014 (Type A)

Name: SHK Signature:

1(a) Binomial

1(b) Geometric

1(c) - i $\frac{3}{2 \cdot 3} = \frac{1}{2}$

1(c)-ii $3 - 5 + 1 = -1$

1(c)-iii $4 + 9 + 1 - 2(3) + 2(-1) - 2(2)$

1(d)-i 0

1(d)-ii e^{-2}

1(d)-iii $1 - e^{-\frac{x}{5}} = 0.6 \quad e^{-\frac{x}{5}} = 0.4$

$\Rightarrow x = -5 \ln 0.4$

1(e)-i $\frac{\sum_{i=1}^{10} X_i - 150}{\sqrt{10} \cdot 3}$

1€(e)-ii $\frac{\bar{X} - 15}{3/\sqrt{10}}$

1(f) $P_r\left(\frac{X-1000}{10} \le \frac{x-1000}{10}\right) = 0.9$

$z_{0.9} \approx 1.285 \quad \therefore x = 1000 + 1.285(10)$

2(a) $\int_{30}^{40} x \frac{1}{20} dx + \int_{40}^{50} 40 \frac{1}{20} dx = \frac{1}{40}\left(40^2 - 30^2\right) + \frac{40}{20}(50 - 40)$

2(b) $\int_{30}^{40} (40 - x) \frac{1}{20} dx = \frac{40}{20}(40 - 30) - \frac{1}{40}\left(40^2 - 30^2\right)$ // Or 40 − Answer from 2(a)

2(c) $\frac{15 - 5}{15 - 1} = \frac{10}{14} = \frac{5}{7} \approx 0.71$

$\frac{y - 30}{20} \approx 0.71$

$\therefore y^* = 30 + 0.71(20)$

3(a) $(6 + 5 + 4 + 3 + 2 + 1) \times \frac{1}{10} \times 70$

3(b) $(1 + 2 + 3) \times \frac{1}{10} \times 630$

3(c) Answer from 3(a) + Answer from 3(b) + 16×200

3(d) $\frac{630 - 200}{630 + 70} = \frac{430}{700} \approx 0.61$

$y^* = 16$

3(e) $\sum_{x=0}^{16} x \frac{e^{-30} 30^x}{x!} + \sum_{x=17}^{\infty} 16 \frac{e^{-30} 30^x}{x!}$

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Blue

ISYE3232A Quiz 1 - Fall 2014 (Type B)

Name: SHK Signature:

1(a) Geometric

1(b) Binomial

1(c) - i $\frac{2}{3 \cdot 1} = \frac{2}{3}$

1(c)-ii $3+5-1 = 7$

1(c)-iii $4+8+1+2(3)-2(-1)-2(2)$
$= 14+6+2-4 = 18$

1(d)-i 0

1(d)-ii e^{-3}

1(d)-iii $1-e^{-x/6} = 0.8$
$e^{-x/6} = 0.2 \rightarrow -\frac{x}{6} = \ln 0.2$ $\therefore x = -6\ln 0.2$

1(e)-i $\frac{\bar{X}-20}{4/\sqrt{100}} = \frac{10(\bar{X}-20)}{4}$

1€(e)-ii $\frac{\sum_{i=1}^{100} X_i - 20(100)}{\sqrt{100} \cdot 4} = \frac{\sum X_i - 2000}{40}$

1(f) $P_r\left(\frac{X-2000}{10} \le \frac{x-2000}{10}\right) = 0.8$
$z \approx 0.845$ $\therefore x = 2000 + 10(0.845)$

2(a) $\int_{50}^{80} x\frac{1}{50}dx + \int_{80}^{100} 80\frac{1}{50}dx = \frac{1}{100}(80^2-50^2) + \frac{80}{50}(100-80)$

2(b) $\int_{50}^{80} (80-x)\frac{1}{50}dx = \frac{80}{50}(80-50) - \frac{1}{100}(80^2-50^2)$ // Or 80 − Answer from 2(a)

2(c) $\frac{20-6}{20-4} = \frac{14}{16} = \frac{7}{8} \approx 0.875$ $F(y) = \frac{y-50}{50} = 0.875$
$\therefore y^* = 50 + 50(0.875)$

3(a) $\left[(3+2+1) \times \frac{1}{10}\right] \times 80$

3(b) $\left[(1+2+3+4+5+6) \times \frac{1}{10}\right] \times 620$

3(c) $\left[(3+2+1) \times \frac{1}{10}\right] \times 80 + \left[(1+2+3+4+5+6) \times \frac{1}{10}\right] \times 620 + 300 \times 13$

3(d) $\frac{620-300}{620+80} = \frac{320}{700} \approx 0.46$ $y^* = 14$

3(e) $\sum_{x=0}^{13} x\frac{e^{-10}10^x}{x!} + \sum_{x=14}^{\infty} 13\frac{e^{-10}10^x}{x!}$