

# ECS 132 Quiz 1

Geoffrey Mohn

TOTAL POINTS

**23 / 35**

## QUESTION 1

### 1 Question 1 5 / 8

- ✓ + 2 pts a) 0.8849
- + 3 pts b) 0.8819
- + 1.5 pts b) Interpreted as OR
- ✓ + 3 pts c) 0.8593
- + 0 pts Incorrect
- + 0 pts Uploaded different quiz solutions

## QUESTION 2

### 2 Question 2 5 / 7

- + 7 pts Correct
- + 0 pts Wrong
- + 4 pts Partially correct
- + 6 pts Partially correct
- + 5 pts Partially correct
- ✓ + 5 pts Have to show how you got the value of  $n$

## QUESTION 3

### 3 Question 3 5 / 7

- + 7 pts Correct
- ✓ + 5 pts Partially correct
- + 5 pts Partially correct
- + 2 pts Just a) part is correct
- + 6 pts Partially correct
- + 0 pts Wrong
- + 0 pts Not answered
- + 4 pts Partially correct

## QUESTION 4

### 4 Question 4 6 / 6

- ✓ - 0 pts Correct
- 2 pts Missing PDF
- 1 pts PDF graphed incorrectly/missing labels
- 4 pts Missing CDF
- 2 pts CDF graphed incorrectly/missing labels

## QUESTION 5

### 5 Question 5 2 / 7

- [a, 3 points]
- 0 pts [a, 3 points] Correct
- ✓ - 1 pts [a, 3 points] Incorrect/incomplete calculation
- 3 pts [a, 3 points] Missing calculation
- [b, 2 points]
- 0 pts [b, 2 points] Correct
- 1 pts [b, 2 points] Incorrect/incomplete calculation
- ✓ - 2 pts [b, 2 points] Missing calculation
- [c, 2 points]
- 0 pts [c, 2 points] Correct
- 1 pts [c, 2 points] Incorrect/incomplete calculation
- ✓ - 2 pts [c, 2 points] Missing calculation
- 7 pts Wrong



# Quiz #1

1) a)  $P(x \leq 1024)$

$\mu = 1000$

$\sigma = 20$

$f_x(1024)$

$G\left(\frac{1024-1000}{20}\right)$

$20$

$G(24/20)$

$\text{erf}(1.2) + 1/2$

$.38493 + .5$

$\approx .88493$

b)  $P(x \leq 1024 | x > 961)$

given  $P(x > 961)$

independent events

$P(x \leq 1024) \text{ given } P(x > 961)$

$G\left(\frac{1024-1000}{20}\right) - G\left(\frac{961-1000}{20}\right)$

$20$

$\text{erf}(1.2) + \text{erf}(1.95)$

$\approx .85934$

c)  $P(3125x \leq 32)$

$P(3125x \leq 32)$

$P(961 \leq x \leq 1024)$

$f_x(1024) - f_x(961)$

$G\left(\frac{1024-1000}{20}\right) - G\left(\frac{961-1000}{20}\right)$

$24$

$20$

$-89$

$20$

$\text{erf}(1.2) - \text{erf}(-1.95)$

$.38493 - -.47941$

$\boxed{= .85934}$

1 Question 1 5 / 8

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+ 3 pts b) 0.8819

+ 1.5 pts b) Interpreted as OR

✓ + 3 pts c) 0.8593

+ 0 pts Incorrect

+ 0 pts Uploaded different quiz solutions



2)  $.49n$  &  $.51n$  atleast .85

$$\mu \pm n/2$$

$$np \pm n/4$$

if  $K_1 = .49n$  &  $K_2 = .51n$  then

$$\frac{.51n - n/2}{\sqrt{n/4}} = \frac{2(.01n)}{\sqrt{n}} = .02\sqrt{n}$$

$$\frac{.49n - .5n}{\sqrt{n/4}} = \frac{-.01n}{\frac{\sqrt{n}}{2}} = \frac{-.02n}{\sqrt{n}} = -.02\sqrt{n}$$

$$G(.02\sqrt{n}) - G(-.02\sqrt{n})$$

$$G(.02\sqrt{n}) + (G(.02\sqrt{n}) - 1) \geq .85$$

$$G(.02\sqrt{n}) + G(.02\sqrt{n}) \geq 1.85$$

$$\text{erf}(.02\sqrt{n}) + \text{erf}(.02\sqrt{n}) + .5 + .5 \geq 1.85$$

$$n = 5256$$

$$\text{erf}(.02(72.5)) + \text{erf}(.02(72.5)) + 1 \geq 1.85$$

$$\text{erf}(1.45) + \text{erf}(1.45)$$

$$.42647 + .42647 + 1 \geq 1.85$$

$$1.85294 \geq 1.85$$



## 2 Question 2 5 / 7

+ 7 pts Correct

+ 0 pts Wrong

+ 4 pts Partially correct

+ 6 pts Partially correct

+ 5 pts Partially correct

✓ + 5 pts *Have to show how you got the value of  $n$*



$$2 \leq x \leq 5$$

$$3 \leq x \leq 6$$

3 a)  $A \cup B$

$$\{2, 3, 4, 5, 6\}$$

b)  $A \cap B$

$$\{3, 4, 5\}$$

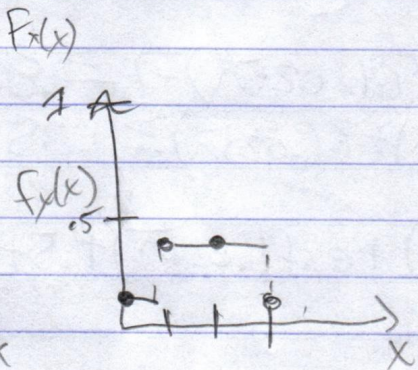
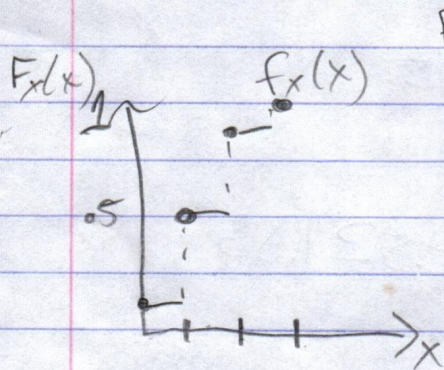
c)  $(A \cup B) \cap (\overline{A \cap B})$

$$\{2, 3, 4, 5, 6\} \cap \{2, 6\}$$

$$\{2, 6\}$$

4.  $n=3$   $p=.5$

tosses		$3-x$
$x$	$x(.5)^x (.5)^{3-x}$	
0	.125	.125
1	.375	.5
2	.375	.875
3	.125	1



5)  $l(\theta) = \ln L(\theta)$

$$\frac{\partial l}{\partial \theta} (L(\theta)) \cdot \frac{1}{L(\theta)} = 0$$



### 3 Question 3 5 / 7

+ 7 pts Correct

✓ + 5 pts Partially correct

+ 5 pts Partially correct

+ 2 pts Just a) part is correct

+ 6 pts Partially correct

+ 0 pts Wrong

+ 0 pts Not answered

+ 4 pts Partially correct



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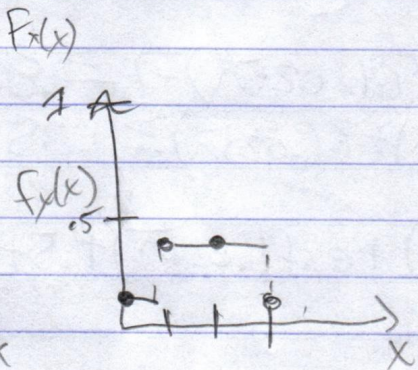
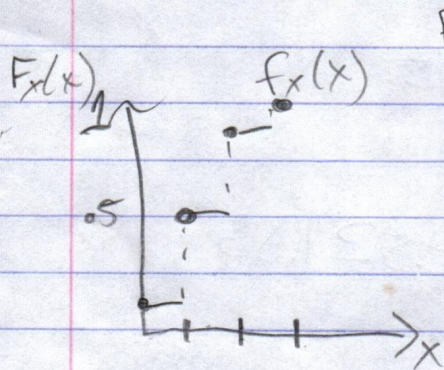
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$$\{2, 6\}$$

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#### 4 Question 4 6 / 6

✓ - 0 pts *Correct*

- 2 pts Missing PDF

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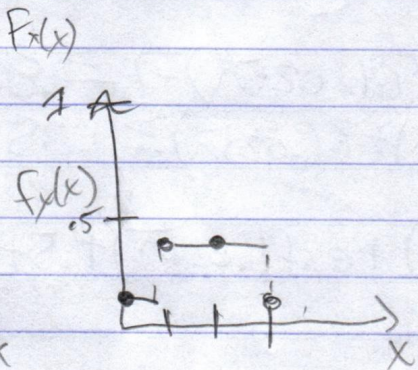
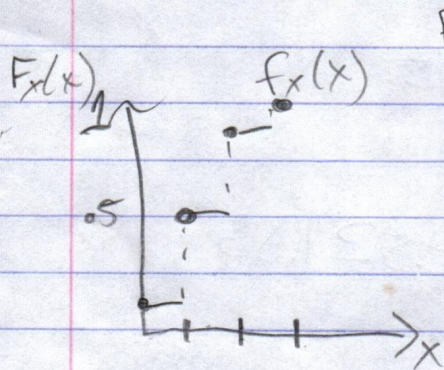
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$$\{2, 6\}$$

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$x$	$x \cdot (.5)^x \cdot (.5)^{3-x}$	$3-x$
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## 5 Question 5 2 / 7

[a, 3 points]

- 0 pts [a, 3 points] Correct

✓ - 1 pts [a, 3 points] *Incorrect/incomplete calculation*

- 3 pts [a, 3 points] *Missing calculation*

[b, 2 points]

- 0 pts [b, 2 points] Correct

- 1 pts [b, 2 points] *Incorrect/incomplete calculation*

✓ - 2 pts [b, 2 points] *Missing calculation*

[c, 2 points]

- 0 pts [c, 2 points] Correct

- 1 pts [c, 2 points] *Incorrect/incomplete calculation*

✓ - 2 pts [c, 2 points] *Missing calculation*

- 7 pts Wrong