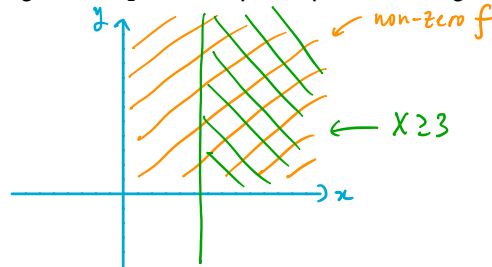


### Review Quiz 4

**Instructions.** You have 10 minutes to complete this review quiz. You may use your calculator. You may not use any other materials. Put your answers on the separate answer form provided.

1. Suppose  $X$  and  $Y$  are random variables, where  $X$  is the wait time to buy a movie ticket and  $Y$  is the wait time to buy a large popcorn. Let  $X$  and  $Y$  have joint density function  $f(x, y) = 0.1e^{-(0.5x+0.2y)}$  for all  $x \geq 0, y \geq 0$ , and  $f(x, y) = 0$  otherwise. Which integral gives the probability that you wait longer than 3 minutes to buy your ticket?

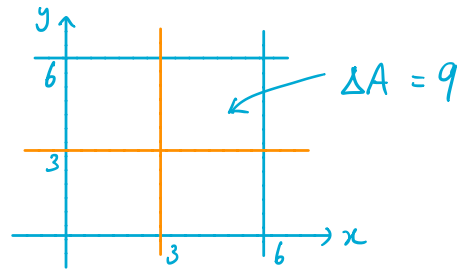
- (a)  $\int_0^\infty \int_0^\infty 0.1e^{-(0.5x+0.2y)} dx dy$
- (b)  $\int_0^\infty \int_0^3 0.1e^{-(0.5x+0.2y)} dx dy$
- (c)  $\int_0^\infty \int_3^\infty 0.1e^{-(0.5x+0.2y)} dx dy$**
- (d)  $\int_3^\infty 0.1e^{-(0.5x+0.2y)} dx$
- (e)  $\int_0^3 0.1e^{-(0.5x+0.2y)} dx$



Handwritten calculation:  $P(X \geq 3) = \int_0^\infty \int_3^\infty 0.1e^{-(0.5x+0.2y)} dx dy$

2. We can approximate the double integral  $\int_0^6 \int_0^6 f(x, y) dy dx$  with a Riemann sum by partitioning the region with  $0 \leq x \leq 6$  and  $0 \leq y \leq 6$  into four equal squares. Which expression could arise as our approximation?

- (a)  $[f(3, 3) + f(3, 6) + f(6, 3) + f(6, 6)] \cdot 4$
- (b)  $[f(3, 3) + f(3, 6) + f(6, 3) + f(6, 6)] \cdot 6$
- (c)  $[f(3, 3) + f(3, 6) + f(6, 3) + f(6, 6)] \cdot 9$**
- (d)  $[f(3, 3) + f(3, 6) + f(6, 3) + f(6, 6)] \cdot 16$
- (e)  $[f(3, 3) + f(3, 6) + f(6, 3) + f(6, 6)] \cdot 36$



3. Which of the following TV shows have you enjoyed the most?

- (a) Game of Thrones
- (b) Stranger Things
- (c) Orange is the New Black
- (d) Breaking Bad
- (e) Scandal

4. My favorite DTA restaurant is

- (a) Sofi's Crepes
- (b) Chick and Ruth's
- (c) Mission BBQ
- (d) Iron Rooster
- (e) None of the above

5. Who will win the Army-Navy football game this weekend?

- (a) Navy
- (b) Army
- (c) Air Force
- (d) CBS
- (e) None of the above