$f(x) = \begin{cases} C(4x - 2x^2), & 0 < x < 2\\ 0, & \text{otherwise} \end{cases}$ integrate then find C. Use = 1

a) What is the value of C?



C)  $\frac{2}{5}$ 

D)  $\frac{1}{2}$ 

## b) Find P(X > 1).

Use C that was found then use 1 as lower and 2 as upper limit

A)  $\frac{1}{5}$ 

B)  $\frac{1}{4}$ 

C)  $\frac{1}{3}$ 



#### 2. The lifetime in hours of a certain kind of radio tube is a continuous random variable having a probability density function given by

$$f(x) = \begin{cases} 0, & x \le 100\\ \frac{100}{x^2}, & x > 100 \end{cases}$$

# integrate and use binomial

What is the probability that exactly 2 of 5 such radio tubes will have to be replaced within the first 150 hours of operation? Assume that such a radio tubes will have to be replaced within this time are independent.

A)  $\frac{1}{3}$ 

B)  $\frac{2}{3}$ 



D)  $\frac{8}{81}$ 

#### 3. Buses arrive at a stop at 15-minute intervals starting at 7A.M. That is, they arrive at 7, 7:15, 7:30, 7:45, and so on. If a passenger arrives at the stop at a time that is uniformly distributed between 7 and 7:30, find the probability that he waits

use uniform distribution

a) less than 5 minutes for a bus

A)  $\frac{2}{3}$ 

B)  $\frac{1}{6}$ 



D)  $\frac{1}{2}$ 

b) more than 10 minutes for a bus



C)  $\frac{1}{6}$ 

D)  $\frac{1}{2}$ 

#### 4. If X is a normal random variable with parameters $\mu = 3$ and $\sigma^2 = 9$ , find

a) P(2 < X < 5)

use standard normal

A) 0.8413

B) 0.0456

C) 0.1265



b) P(|X-3| > 6)

B) 0.3779

C) 0.8413

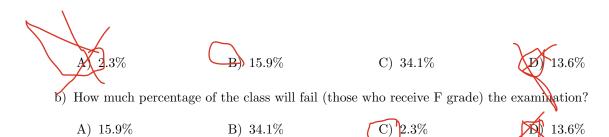
D) 0.5971

### 5. An examination is often regarded as being good if the valid grade spread for those taking it is determined by a normal density function. The instructor often uses the test scores to estimate the normal parameters $\mu$ and $\sigma^2$ and then assigns the grade A to those whose score is greater than $\mu + \sigma$ , grade B to those whose score is between $\mu$ and $\mu + \sigma$ , grade C to those whose score is between $\mu - \sigma$ and $\mu$ , grade D to those whose score is between $\mu - 2\sigma$ and $\mu - \sigma$ , and grade F to those getting score below $\mu - 2\sigma$ .

With this info, we can go find the z value

a) How much percentage of the class will receive an A grade on the examination?

Stand dev = 1



6. The amount of time, in hours, that a computer functions before breaking down is an exponential continuous random variable with parameter  $\lambda = \frac{1}{100}$ . What is the probability that a computer will function between 50 and 150 hours before breaking down

A) 0.279 B) 0.824 C) 0.384 D) 0.633

Insert the formula for exponential continuous and youll find the answer