LSN 9 LAB 3, MA476.

1. Find the Mean, 20th percentile and 80th percentile of the following random variables, write the function in the space below:

RV	Mean	20th Percentile	80th Percentile
Normal(3,2)			
Normal(3,4)			
Exponential(1/3)			
Cauchy(3,2)			
Weibull(0.296, 2)			

2. Find the probability that the following RVs take on values greater than 1:

PDF	P(X>1)
$f(x) = 1/12$	
$f(x) = \frac{81}{8} x^4 e^{-3x}$	
$f(x) = 1215 \frac{x^4}{(1+243x^5)^2}$	
$f(x) = 41.2\, e^{-41.2x}$	

3. Find σ for the Normal distribution such that a sample has 60 as its mean and its 20th percentile is 51.1. Plot this distribution

4. Find λ for the exponential distribution such that the median value is 12.

5. Find b for the Cauchy RV(4, b) such that 51.1 is the median.

6. Go to the home page and down load the code for an animation example (from Dr. Diane Evans, Rose-Hulman University, 2001).

a. Run it to see how the T RV approaches the standard normal RV

b. Modify the code to see the exponential distribution change as λ varies from .01 by 1/10 to 2.01.

c. Modify the code to see how the Weibull(a, 2.1) changes shape as a=0.01, by 1/10 to 2.01

7. If you didn't finish this from last lesson, do the following: In the back of Devore's Text is a chart showing the critical values for the T distribution. Recreate that chart. Use degrees of freedom 10, 20, … 50. Find the critical points for probabilities 0.9, 0.95, 0.975, 0.99. Recall that to find x such that $P(X<x)=0.90$, requires that we take the inverse distribution at 0.9, i.e., IDF(T10, 0.9). You may also want to uses Maple's do loop syntax:

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for i from 1 to 10 do …  od;
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