

## Homework 1

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PSTAT 160A  
September 27, 2016

10. (a) See variable U in the .py file
- (b)  $F^{-1}(x) = -3 \ln(1 - x)$
- (c) If  $e_k = F^{-1}(U_k)$  and  $U \sim \text{Uniform}(0, 1)$ , then by the Inverse Transformation Method,  $e_k$  has distribution function  $F$ . Now,  $F(x) = 1 - \exp(-(1/3)x)$  which is the distribution function of an exponential distribution with mean 3. Thus,  $e_k$  for all  $k$  are exponentially distributed.
- (d) Yes, the histogram looks a lot like textbook graphs of the exponential distribution.