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AMS 131: Quiz 6

Name: _____ Discussion Section (Day and Time): _____

(You can use the back of this page as needed.)

In a problem you're working on, you need to simulate random draws from the following PDF for the random variable Y:

$$f_Y(y) = \left\{ \begin{array}{cc} \frac{1}{2}(2\,y+1) & \text{for } 0 \le y \le 1 \\ 0 & \text{otherwise} \end{array} \right\} . \tag{1}$$

(a) Sketch the PDF in equation (1) for y in the interesting range $[0, 1]$.

(b) Work out the CDF $F_Y(y)$ for Y, specifying its values for all $-\infty < y < \infty$, and sketch it in the interesting range $0 \le y \le 1$.

(c) Work out the inverse CDF (quantile function) $F_Y^{-1}(p)$, specifying its values for all $0 < p < 1$, and sketch it for p in that range.

(d) Briefly explain how you can use your results in (c) to generate IID random draws from the PDF in equation (1).

(e) Once you have your random sample in (d), briefly explain how you could graphically check whether it really *is* a sample from the PDF in equation (1).