1. Let X_1 and X_2 be two independent random variables. X_1 is normal $N(1,1)$ and X_2 is normal $N(0,2)$. Find c such that

$$P\{X_1 - 2X_2 \leq c\} = .1$$

using one of the tables in your book.

$X_1 - 2X_2 \sim N(1, 1+4(2)) \sim N(1, 3^2)$

$.1 = \mathbb{P}(X_1 - 2X_2 \leq c) = \mathbb{P}\left(\frac{X_1 - 2X_2 - 1}{3} \leq \frac{c-1}{3}\right)$

$\Rightarrow \quad \frac{c-1}{3} = z_{.10} \in (-1.29, -1.28)$

$\Rightarrow \quad c \in (1 - 3(1.29), 1 - 3(1.28))$