1. Losses from a policy covering emergency room visits are distributed as a Pareto distribution with $\alpha = 3$ and $\theta = 1000$.

The insurance company wants to impose a deductible such that the expected cost per emergency room visit under the policy is reduced to 50%. In other words:

$$E[(X-d)_+] = 0.5E[X]$$

Determine $d$. 
2. The random variable $X$ is uniformly distributed between 20 and $z$.

$\text{TVaR}_{.80}(X) = 155$.

Determine $k$ so that the standard deviation principle is also equal to 155.