The heights of newborn zebras are normally distributed with a mean of 33 inches and a standard deviation of 3 in.

(a) Give the population $\Omega$, the measurement $X$, and the proper notation for the distribution of $X$ in this case.

$$\Omega = \text{Newborn zebras} \quad X = \text{Height in inches} \quad X \sim N(33, 3) \text{ in.}$$

(b) Draw and shade the regions below, then find the percentage of newborn zebra heights that measure

(i) at least 31.4 in.

$$\text{normalcdf}(31.4, 1E99, 33, 3) = 0.703, \text{ or } 70.3\%$$

(ii) at most 34.1 in.

$$\text{normalcdf}(\text{-}1E99, 34.1, 33, 3) = 0.643, \text{ or } 64.3\%$$

(iii) from 30 to 34 inches

$$\text{normalcdf}(30, 34, 33, 3) = 0.4719, \text{ or } 47.19\%$$

(c) What height $x$ is such that 12.5% of all newborn zebra heights are above $x$?

Note: 87.5% are below $x$. Must use the cumulative area of 0.875 up to $x$.

$$\text{invNorm}(0.875, 33, 3) = 36.451 \text{ in.}$$

(d) Find the bounds $x$ and $y$, symmetric about $\mu$, in between which are 72% of newborn zebra heights.

72% in the interior means 28% leftover with 14% at each tail.

$$x = \text{Left bound} = \text{invNorm}(0.14, 33, 3) = 29.759 \text{ in.}$$

$$y = \text{Right bound} = \text{invNorm}(0.86, 33, 3) = 36.241 \text{ in.}$$