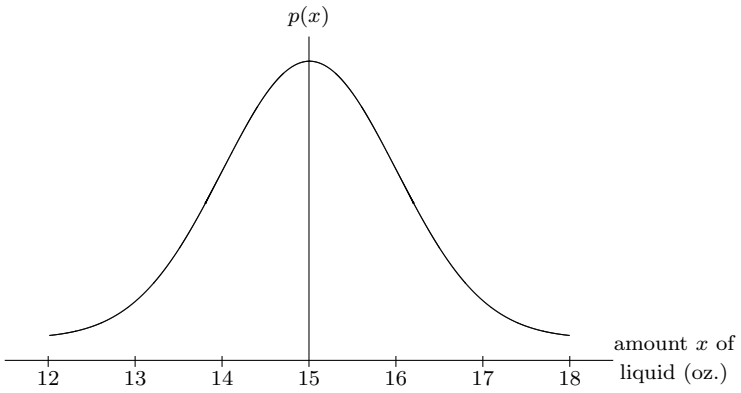
2. (10 points) A firm that manufactures and bottles apple juice has a machine that automatically fills bottles with 15 ounces (oz) of apple juice. There is some variation, however, in the amount of liquid dispensed in each bottle. Over a long period of time, the average amount dispensed into the bottles was 15 ounces, but the underlying measurements showed the distribution of the ounces, x, of juice in the bottles was given by $p(x) = \dfrac{1}{\sqrt{2\pi}}\, e^{-\frac{1}{2}(x-15)^2}$.



(a) What fraction of the bottles contained between 14 and 16 oz of juice? *Explain.*

(b) Give a graphical interpretation of your answer to part **(a)** on the figure.

(c) Find, as accurately as you can, the fraction of the bottles that contained at least 17 oz of juice inside them. *Explain.*