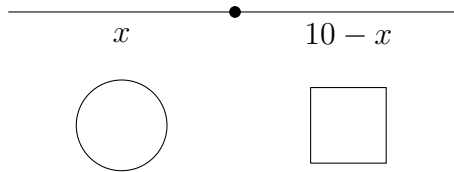1. A length of wire 10 meters in length is cut into two lengths, x and $10 - x$. The first is made into a circle and the second into a square. For what value of x is the total area of the two figures minimized? (Recall: the circumference of a circle is $2\pi r$ and the area of a circle is πr^2 where r is the radius of the circle.) Answer: $\frac{10\pi}{4+\pi}$.

$$x \qquad 10 - x$$

2. Use l'Hôpital's rule to find the following limits.

(a) $\lim\limits_{t \to 0} \dfrac{e^t - 1 - t}{t^2}$

(b) $\lim\limits_{x \to \infty} xe^{1/x} - x$