29. The median of a distribution is the value m such that $P(X \le m) = \frac{1}{2}$ and $P(X \ge m) = \frac{1}{2}$. Find the median of the following distributions. Use R to draw the PDFs with a red vertical line representing the median.

(a) $f(x) = 3x^2, \quad 0 < x < 1$.

(b) $f(x) = \{\pi(1 + x^2)\}^{-1}, \quad -\infty < x < \infty$.