Check your understanding

36. Suppose we want to set up a triple integral over the region defined by the inequalities $x^2 \leq y \leq 1$ and $0 \leq z \leq 1 - y$ in the order $dx\,dy\,dz$. What are the z limits?

   (a) $0 \leq z \leq 1$.

   (b) $0 \leq z \leq 1 - y$.

   (c) $0 \leq z \leq 0$.

   (d) $-\infty < z \leq 1$.

   Answer: (a).

   Explanation: We are given that $0 \leq z \leq 1 - y$. Since $y \geq x^2$, we must have $y \geq 0$, so $1 - y \leq 1$. Note that (b) does not make sense because y is not fixed. The answer can only involve constants.