Question #139
Answer: C

$\Pr\left[L(\pi') > 0\right] < 0.5$

$\Pr\left[10{,}000v^{K+1} - \pi' \ddot{a}_{\overline{K+1}|} > 0\right] < 0.5$

From Illustrative Life Table, ${}_{47}p_{30} = 0.50816$ and ${}_{48}p_{30} = .47681$

Since *L* is a decreasing function of *K*, to have
$\Pr\left[L(\pi') > 0\right] < 0.5$ means we must have $L(\pi') \le 0$ for $K \ge 47$.
Highest value of $L(\pi')$ for $K \ge 47$ is at *K* = 47.

$$L(\pi')[\text{at } K = 47] = 10{,}000\, v^{47+1} - \pi' \ddot{a}_{\overline{47+1}|}$$

$$= 609.98 - 16.589\pi'$$

$$L(\pi') \le 0 \Rightarrow (609.98 - 16.589\pi') \le 0$$

$$\Rightarrow \pi' > \frac{609.98}{16.589} = 36.77$$