Let $X$ be amount you bidded, $W$ be profit made. $W = \begin{cases} \text{For with } P(\text{ win bid }) \\ \square \text{ with } P(\text{ lose bord }) \end{cases} = \frac{140x - x^2 - 14000 + 100x}{70}$

$= \frac{240x - x^2 - 14000}{70}$ differentinte W.rit. $u$

$$\begin{aligned} \frac{d}{dx}E(w) &= \frac{24}{7} - \frac{1}{70}(2x) \\ &= \frac{24}{7} - \frac{2}{70}x \end{aligned}$$

when $\frac{d}{dx}E(W) = 0$, $\frac{24}{7} - \frac{2}{70}x = 0$

$$x = 120$$

$$\frac{d}{dx}\left[\frac{d}{dx}E(w)\right] = -\frac{2}{70}(< 0)$$

$\therefore E(w)$ is maximum when $x = 120$. Hence, 1 should bid $\$120,000$.