X be amount bidded, W be profit. Let y be the minimum bid of the rest.

For a fixed x, $\omega = \begin{cases} x - y, & f_y(y) = \frac{1}{70} \\ 0. & f_y(y) = \frac{y-70}{70} \end{cases}$

P Win bid $) = P(x < Y)$

$$= 1 - P(Y < x)$$

$$= 1 - P(Y \leqslant x)$$

$$= 1 - \frac{x - 70}{70}$$

$$= 2 - \frac{x}{70}$$

$$E(W) = (x - 100)\left(2 - \frac{x}{70}\right)$$

$$= 2x - 200 - \frac{x^2}{70} + \frac{10x}{7}$$

$$\frac{d}{dx}E(W) = 2 - \frac{2\pi}{70} + \frac{10}{7} \rightarrow 2 - \frac{2x}{70} + \frac{10}{7} = 0$$

$$x = 120$$

Check whether this is max: $\left(2 - \frac{2x}{70} + \frac{10}{7}\right)' = -2^{-\frac{2}{70}} < 0 \ (\text{max})$

$$\therefore x = \$120,000$$