1. DisplayAds. An article in *Business Week*, 3/14/2011, looks at the display ad industry (the bigger graphical ads on web pages) 3 years after Google purchased DoubleClick. Several issues are mentioned that relate to our class.

(a) There is a standard monopoly diagram with marginal cost of 1¢ and optimal quantity of 100. The monopoly operating profit is then \( \pi_m = (3 - 1)100 = 200 \).

\[\begin{align*}
\text{Profit} & = (3-1)100 = 200.
\end{align*}\]

(b) The demand curve in part (a) was a bundle of the demand for generic ad space and the demand for ad serving. The unbundled demand for ads on Facebook is just the same demand curve shifted down by 1¢. The marginal cost to Facebook is also shifted down 1¢ since the ad serving is now done by someone else.

Since both curves are shifted down by the same amount, the monopoly quantity is still 100, the price is 2¢, and the operating profit is \((2-0)100=200\).

This is called the “one” monopoly profit because there is only one monopoly here, that of Facebook over space on its pages. There is no additional monopoly power in ad serving; in fact...
this is a perfectly competitive service according to this problem. Thus, the one monopoly has the same value either way.

(c) If the contract were let to the highest bidder, then the highest possible profit occurs by definition when the firm charges the monopoly price $p_M$. This creates deadweight loss shown by the shaded area in the diagram. Since the goal here is to make the service widely available, incurring DWL is problematic.

If instead the contract is let to the firm that bids the lowest user price, then the lowest profitable bid is $p_{AC}$ where price equals average cost. This produces the smallest deadweight loss that still allows the firm to be self-liquidating, i.e. not needing a subsidy.