(1a) Yes. One solution would be: *Interval Scheduling* can be solved in polynomial time, and so it can also be solved in polynomial time with access to a black box for *Vertex Cover*. (It need never call the black box.) Another solution would be: *Interval Scheduling* is in NP, and anything in NP can be reduced to *Vertex Cover*. A third solution would be: we've seen in the book the reductions *Interval Scheduling* $\leq_P$ *Independent Set* and *Independent Set* $\leq_P$ *Vertex Cover*, so the result follows by transitivity.

(1b) This is equivalent to whether P = NP. If P = NP, then *Independent Set* can be solved in polynomial time, and so *Independent Set* $\leq_P$ *Interval Scheduling*. Conversely, if *Independent Set* $\leq_P$ *Interval Scheduling*, then since *Interval Scheduling* can be solved in polynomial time, so could *Independent Set*. But *Independent Set* is NP-complete, so solving it in polynomial time would imply P = NP.

[1] ex370.181.361