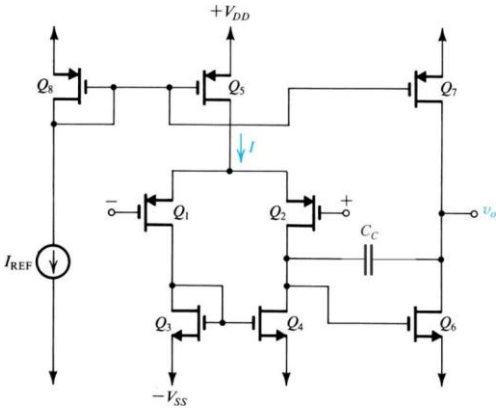
Quiz 1 on Oct 26th :

True (v) or False (x) (5 pts, 1 pt for each question):

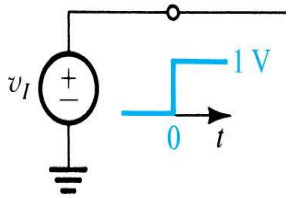
(x): The allowable input range of a 2-stage op as below is

$$-V_{SS}+V_{OV3}-|V_{tp}| \le V_{ICM} \le V_{DD}-|V_{tp}|-|V_{OV1}|-|V_{OV5}|.$$



(v): The overall gain of the 2-stage as above is $g_{m2}(r_{o2}\|r_{o4})g_{m6}(r_{o2}\|r_{o4})$.

(x): With a large signal applied to the 2-stage op as shown below, Q1 in the first figure will be turned off initially in the transient period.



(v) In the transient period defined in the previous question, the current drawn from the output node is exactly *I*, as denoted in the first figure, which is the current provide by Q3, a saturated current source.

(x): Lower Vov increases bandwidth and gain of an op.