Q.1 For the circuit in Fig.1, find the value of R that results in VD = 0.7 V. The MOSFET has Vtn = 0.5 V, μnCox = 0.4 mA/V2, W/L = 0.72 μm /0.18 μm

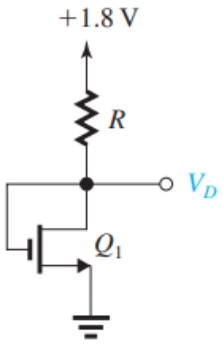

Fig.1

Q.2 Design the circuit to obtain a current I_D of 0.4mA. Find the value required for R. Let the NMOS transistor have V_{TH}=2V, $\mu_n C_{OX}$=200μA/V2, L=10μm and W=100μm. Neglect channel length modulation effect.

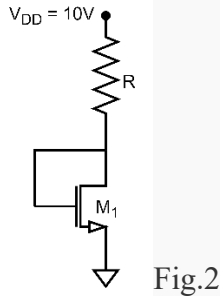

Fig.2

Q3. Consider a n-MOSFET as shown in figure below. What will be the change in I_D if V_{DD} changes from 3.3 to 1.8V. Consider V_{TH}=0.5V and $\mu_n C_{ox} W/L$=100μA/V^2.