2. $u^3 - 8u^2 + 19u - 12$ has a factor $(u-1)$ compute all other factors:

$(u - 3) \, u \, (u + 2)$

$(u - 3) \, u \, (u + 1)$

$(u - 4) \, (u - 3) \, (u - 1)$

$(u - 4) \, (u - 3)^2$

Solution
Apply Long Division.
$(u - 4) \, (u - 3) \, (u - 1)$