1. $d^3 + 2d^2 - 3d$ has a factor $(d - (-3))$ compute all other factors:

$(d - 4)(d - 3)(d + 1)$

$(d - 3) d (d + 1)$

$(d - 1) d (d + 3)$

$(d - 3)(d - 2)(d + 1)$

Solution
Apply Long Division.
$(d - 1) d (d + 3)$