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

$(c - 4) \ (c + 3) \ (c + 4)$

$(c - 3) \ c \ (c + 3)$

$(c - 1) \ c \ (c + 3)$

$(c - 2)^2 \ (c + 3)$

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