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

$(v+2)^2 (v+3)$

$(v-1)(v+2)(v+4)$

$v(v+1)(v+2)$

$(v-2)(v+2)^2$

Solution
Apply Long Division.
$v(v+1)(v+2)$