2. $w^3 + 6w^2 + 5w - 12$ has a factor $(w-(-4))$ compute all other factors:

$w\,(w+2)\,(w+3)$

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

$(w-1)\,(w+3)\,(w+4)$

$(w-2)\,(w+3)^2$

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