t^2-1

f_0 : t^2-1
f_1 : $2t$
f_2 : 2 (because $tf_1 - 2 = 2f_0$)

: $+$ $-$ $+$
$V(-2) = 2$

2: $+$ $+$ $+$
$V(2) = 0$ $\therefore$ 2 distinct roots

$t^3 - t$

f_0 : $t^3 - t$
f_1 : $3t^2 - 1$ (because $tf_1 - 2t = 3f_0$)
f_2 : $2t$ (because $3tf_2 - 2 = 2f_1$)
f_3 : 2

: $-$ $+$ $-$ $+$
$V(-2) = 3$

2: $+$ $+$ $+$ $+$
$V(2) = 0$ $\therefore$ 3 distinct roots

$t^4 - t^2$

f_0 : $t^4 - t^2$
f_1 : $4t^3 - 2t$ (because $tf_1 - 2t^2 = 4f_0$)
f_2 : $2t^2$ ($2tf_2 - 2t = f_1$)
f_3 : $2t$ ($tf_3 = f_2$)
f_4 : 0

2: $-$ $+$ $-$ $+$
$V(-2) = 3$

2: $+$ $+$ $+$ $+$
$V(2) = 0$ $\therefore$ 3 dist roots.