W2-11-3 The total differential of a function S 3

Consider the function $S = S(U, V) = -2U^3 - U^{-2} - 3V^5 + 8V$. Calculate for which value of V the function S has an extreme value. $V_{extreme} = \ldots\ldots$

For an extreme value of S, dS should be zero.
This is only possible if and only if $\left(\frac{\partial S}{\partial V}\right)_U = 0$.

$-15V^4 + 8 = 0 \rightarrow V_{extreme} = \pm \left(\frac{8}{15}\right)^{\frac{1}{4}}$.