

Provide a clear and organized presentation. Give exact values only.

Let $f(x) = x\sqrt{x+1}$. Determine the intervals over which f is increasing/decreasing/concave up/concave down. Determine all intercepts, local extrema, and inflection points. Be certain to justify any claims of extrema (i.e., the FDT or the SDT). Clearly sketch the graph of this function.