1. Find all critical values of each function, and then use the First Derivative Test to classify each as a local max, local min, or neither.

   (a) $f(x) = x^3 + 3x^2 - 9x - 4$

   (b) $g(x) = 3x^4 - 4\sqrt{2}\,x^3 + 8$

2. If two non-negative numbers sum to 12, what is the largest that their product can be?