3. [11 points] Throughout this problem, let $p(x) = -x^3 + 3x + 2$.

a. [2 points] Find the x-coordinates of all critical points of $p(x)$. If there are none, write NONE.

Answer: Critical points at $x =$ _____

In parts **b.** – **d.** below, you are asked to find extrema (local or global) of $p(x)$ on a given interval. If there are none of a particular type, write NONE. Use calculus to find your answers, and make sure you show enough evidence to justify your conclusions.

b. [3 points] Find the x-coordinates of all local minimum(s) and local maximum(s) of $p(x)$ on the interval $(-2, 3)$.

Answer: Local min(s) at $x =$ _____

Answer: Local max(es) at $x =$ _____

c. [4 points] Find the x-coordinates of all global minimum(s) and global maximum(s) of $p(x)$ on the interval $[-2, 3]$.

Answer: Global min(s) at $x =$ _____

Answer: Global max(es) at $x =$ _____

d. [2 points] Find the x-coordinates of all global minimum(s) and global maximum(s) of $p(x)$ on the interval $(-2, 3)$.

Answer: Global min(s) at $x =$ _____

Answer: Global max(es) at $x =$ _____