2. (12 points) Suppose $a$ is a positive (non-zero) constant, and consider the function

$$
f(x)=\frac{1}{3} x^{3}-4 a^{2} x .
$$

Determine all maxima and minima of $f$ in the interval $[-3 a, 5 a]$. For each, specify whether it is global or local.

