_____

Section 2.4: Absolute Extrema

After learning this section, you should be able to:

1. Determine absolute extrema of a function on a closed interval from a given graph.
2. Determine absolute extrema of a function on a closed interval using the Closed Interval Method.

_____

Def: An _____ is the largest

_____ of $f(x)$. If we restrict $f(x)$ to the closed _____ _____,

then the _____ of $f(x)$ on that interval is the largest

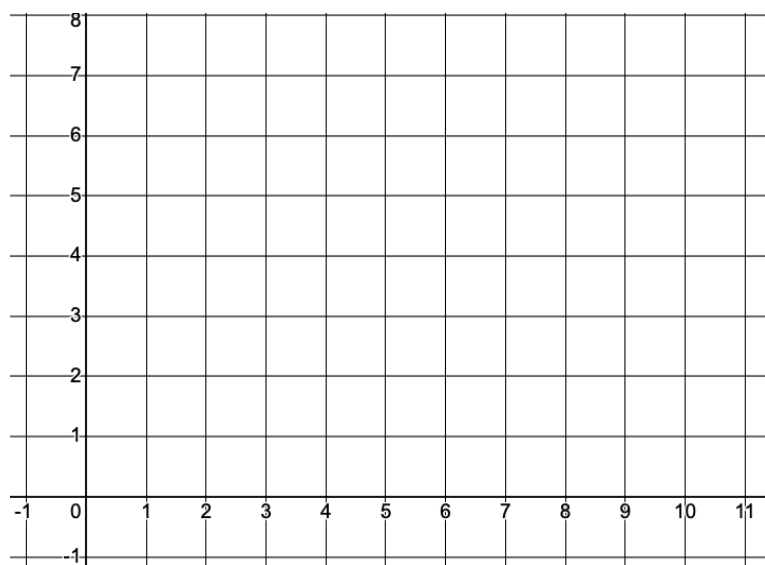_____ of $f(x)$ on that interval.

Def: An _____ is the smallest

_____ of $f(x)$. If we restrict $f(x)$ to the closed _____ _____,

then the _____ of $f(x)$ on that interval is the smallest

_____ of $f(x)$ on that interval.

Identify any relative or absolute minimums and maximums on the following graphs.

Ex #1:
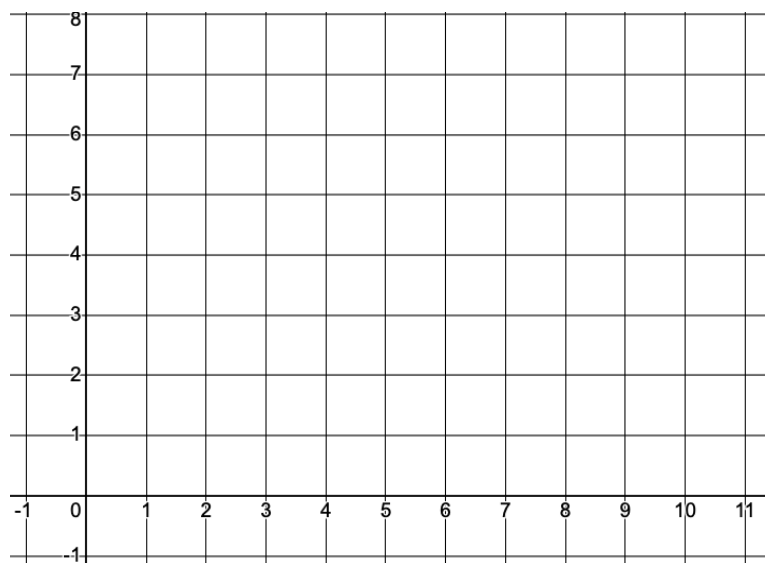
Ex #2:

Closed Interval Method: To find the _____
(min/max) of a _____ function $f(x)$ on a _____
interval _____:

1)

2)

3)

4)

Find the absolute minimum and maximum values of the following functions.

Ex #1: $f(x) = 12 + 4x - x^2$ on the interval $[0, 5]$

Ex #2: $f(x) = \frac{1}{3}x^3 - \frac{1}{2}x^2 - 6x$ on the interval [0,5]

Ex #3: (Check) $f(x) = \frac{1}{2}x^4 - x^2 + 2$ on the interval $\left[-\frac{1}{2}, 2\right]$