**Secondary Math 2 8.0 Homework Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_**

**Interval Notation**:

Interval Notation is used as an alternative method of expressing inequalities. It represents all REAL numbers in a specified interval. The use of soft brackets ( or ) indicate that the endpoint is not included or that the interval is open. The use of hard brackets [ or ] indicate that the endpoint is included or that the interval is closed. We always list the endpoints of the interval in order of least to greatest. Since $\infty $ is a concept and cannot actually be reached, you will always use a soft bracket on either $+\infty $ or $-\infty .$

**Example**:

* $x>6$ would be expressed as $\left(6, \infty \right)$
* $x\leq 0$ would be expressed as $\left(-\infty ,0\right]$
* $-2<x\leq 8$ would be expressed as $\left(-2, 8\right]$
* $x<-1$ or $x>3$ would be expressed as $\left(-\infty , 1\right)∪\left(3,\infty \right)$ \*where the $∪$ stands for “union” (oftentimes we leave out the $∪$ and assume it to be implied, in which case $\left(-\infty ,1\right)\left(3,\infty \right)$

**Problem Sets**: Fill in the missing portions of the table.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Inequality or Set | Graph | Interval Notation |
|  | $$x>-6$$ |  |  |
|  |  |  |  |
|  |  |  |  |
|  | $$x\leq -5$$ |  |  |
|  |  |  | $$\left[-6, \infty \right)$$ |
|  | $$x>5$$ |  |  |
|  |  |  | $$\left(-3, \infty \right)$$ |
|  |  |  |  |
|  |  |  |  |
|  | $$-12\leq x\leq 2$$ |  |  |
|  |  |  | $$\left(-\infty ,-12\right]∪\left[0, \infty \right)$$ |
|  | $x$ is all Real numbers |  |  |