

4.1 – Interval Notation with Domain and Range

Writing Domain/Range – Inequality Notation Vs. Interval Notation

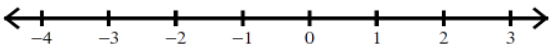
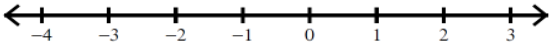
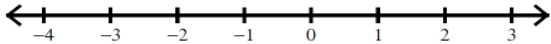
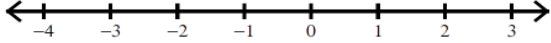



– **inequality notation** → rewriting expressions using the six inequality symbols which are ...

_____, _____, _____, _____, _____, and _____

– **interval notation** → rewriting inequalities using _____, _____
and/or both with grouping symbols such as _____ and _____

- brackets represents _____ such as _____, _____, or _____
- parentheses represents _____ such as _____, _____, or _____
- If you have more than 1 interval (or “area of shading”), then you must use _____

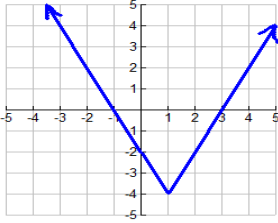
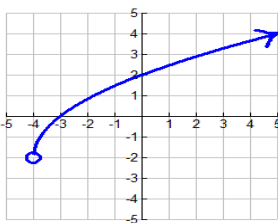
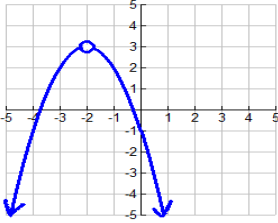
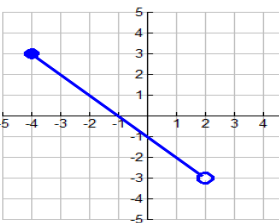
Example 1: Complete the chart below using the appropriate notation(s).

| | Inequality Notation | Interval Notation | Graph (on a number line) |
|-----|-------------------------|-------------------|--|
| a.) | $x > 2$ | |  |
| b.) | $x \leq -1$ | |  |
| c.) | $-4 < x \leq 0$ | |  |
| d.) | all real numbers (IR) | |  |
| e.) | $\mathbb{R}, x \neq -3$ | |  |
| f.) | $x < -2$ or $x \geq 1$ | |  |
| g.) | $x \geq -3, x \neq 0$ | |  |

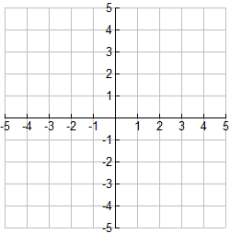
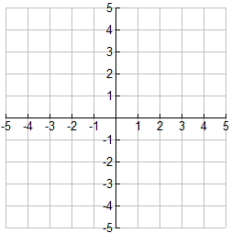
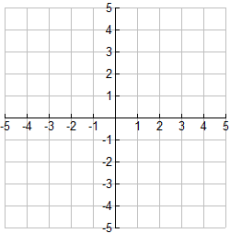
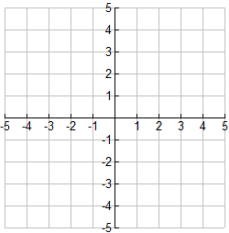
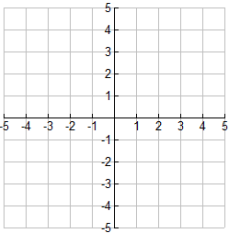
– **domain (of a graph)** → set of all _____ in which a function is defined (look _____)

– **range (of a graph)** → set of all _____ in which a function is defined (look _____)

Example 2: Determine the domain and range (using interval notation) of each given graph.

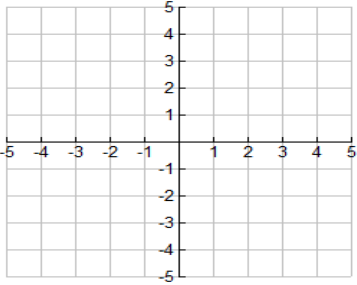
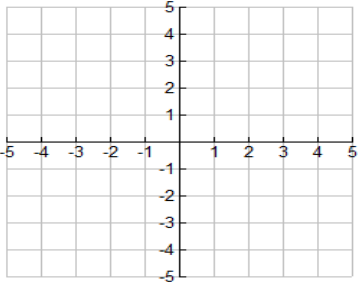
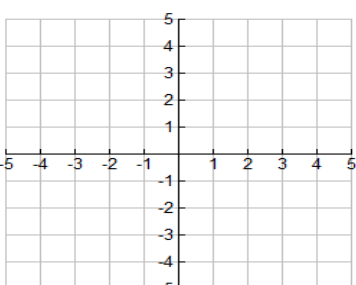
| Example 2a | Example 2b | Example 2c | Example 2d |
|---|---|--|---|
|  |  |  |  |
| D/R – Using an Interval D: _____ R: _____ | D/R – Using an Interval D: _____ R: _____ | D/R – Using an Interval D: _____ R: _____ | D/R – Using an Interval D: _____ R: _____ |

Basic Parent Functions For Transformations

| Quadratic | Cubic | Absolute Value | Cube Root | Square Root |
|--|---|---|---|---|
|  |  |  |  |  |
| Eq: _____ | Eq: _____ | Eq: _____ | Eq: _____ | Eq: _____ |
| D: _____ | D: _____ | D: _____ | D: _____ | D: _____ |
| R: _____ | R: _____ | R: _____ | R: _____ | R: _____ |

| Transformation # 1 – Vertical Translations | Transformation # 2 – Horizontal Translations |
|---|---|
| <p>If have $y = f(x) \pm d$ then you can have ...</p> <ul style="list-style-type: none"> + d which means _____ - d which means _____ | <p>If have $y = f(x \pm c)$ then you can have ...</p> <ul style="list-style-type: none"> + c which means _____ - c which means _____ |

Example 3: Do the following – a.) Draw in the original parent graph in **BLACK**.
b.) State all the transformations in the given function.
c.) Graph the function based on its transformations in **COLOR**.
d.) State the domain and range of graphed/transformed function only using interval notation.

| Example 3a | Example 3b | Example 3c |
|--|--|---|
| <p>Given Function: $y = x + 2 - 3$</p> <p>Transformations: _____</p>  <p>Domain (of given funct): _____</p> <p>Range (of given funct): _____</p> | <p>Given Function: $y = (x - 3)^3 + 1$</p> <p>Transformations: _____</p>  <p>Domain (of given funct): _____</p> <p>Range (of given funct): _____</p> | <p>Given Function: $y = \sqrt{x + 2} + 2$</p> <p>Transformations: _____</p>  <p>Domain (of given funct): _____</p> <p>Range (of given funct): _____</p> |