

**Unit #1: Functions**

**Section #1: Vocabulary (words and/or diagrams)**

**Define each:**

|  |  |  |
| --- | --- | --- |
| **Relation-****Function-****Parent function-****Domain-****Range-****One to one function-** | **Vertical line test-****Horizontal line test-****X-intercept-****Y-intercept-****Inverse function-****Inverse function notation-** | **Relative maximum/ minimum-****Absolute maximum/ minimum-****Increasing/Decreasing function****Where function positive-****Where function negative-** |

**Section #2: Formulas/Equations/Rules**

* **Set notation: Express each in both set builder notation AND interval notation.**

****A) B)

* **Composition rule: If f(x)= x2 – 1 and g(x) = 3x + 2, evaluate each:**

**C) f(g(x)) express as a trinomial D) (gf)(x) express as a binomial**

* **Restricted domains: Determine the restricted domain for each function by showing your process!!**
1. **f(x) =** $\frac{4x^{2}}{x-7}$ **F) g(x) =** **G) h(x) =**

**Section #3: Key methods and concepts (show a solved example for each)**

* **The inverse of a function is also a function if the original function is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**
* **A) Show how to find the inverse of f(x) =  graphically and algebraically.**

**Algebraically Graphically**

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 **Reflect over the line y = \_\_\_\_\_\_\_\_\_\_\_**

* **3 ways to prove an inverse- Show that f(x) = in the domain** $x\geq 0 $**and g(x)=  in the domain** $x\geq 3 $**are inverses.
Graphically, Algebraically and Using compositions**

** Algebraically Graphically**

**Compositions**

**Answers: 2A)** $\{0\leq x<4\}$$[0,4)$ **B)** $\{x\leq -3 or x>4\}$$(-\infty ,-3]∪(4,\infty )$ **C)** $9x^{2}+12x+3$

**D)** $3x^{2}-1$ **E)** $x\ne 7$ **F)** $x\geq 8$ **G)** $x>-4$ **3A)** $f^{-1}\left(x\right)=\frac{7}{3}x+\frac{70}{3}$

* **Parent functions: Graph all the given** parent functions on the next page!!!

|  |  |
| --- | --- |
| 1. **Linear Function**  or

Domain:Range: | 1. **Absolute Value Function**  or

 Domain:Range: |
| 1. **Quadratic Function**  or

  Domain: Range: | 1. **Square Root Function**  or

 Domain:Range: |
| 1. **Exponential Function**  or

 Domain:Range: | 1. **Logarithmic Function**  or

Domain:Range: |
| 1. **Rational Function (Reciprocal Function)**

 or  Domain:Range: | 1. **Cubic Function**  or

 Domain:Range: |