## Algebra 2

## Lesson 1: Parent Functions

## Mrs. Snow, Instructor

Families. How many times have you heard, "You look just like your mother!" or "You certainly see the family resemblance." Maybe you have thought that about your friend who looks exactly like one of the parents. Well, functions have family bonds too. Functions will look like their parent function.

## Vocabulary

family of functions - a set of functions whose graphs have basic characteristics in common.
parent function - the most basic function in a family; strip away all coefficients, negative signs, constants, etc you get the parent function.

You are expected to know the equation, graph, and domain and range for each of the parent functions

| Linear Function: $f(x)=x$ or $y=x$ |  |
| :---: | :---: |
| Absolute Value Function: $f(x)=\|x\|$ or $y=\|x\|$ |  |
| Quadratic Function: $f(x)=x^{2}$ <br> or $y=x^{2}$ |  |


| $\begin{aligned} & \text { Square Root Function: } f(x)=\sqrt{x} \\ & \qquad \text { or } y=\sqrt{x} \end{aligned}$ |  |
| :---: | :---: |
| Exponential Function: $f(x)=b^{x}$ or $y=b^{x}$ |  |
| Log Function: $f$ $\begin{aligned} & f(x)=\log _{b} x \\ & \quad \text { or } \quad y=\log _{b} x \end{aligned}$ |  |
| $\begin{array}{r} \text { Reciprocal Function: } f(x)=\frac{1}{x} \\ \text { or } y=\frac{1}{x} \end{array}$ |  |

Cubic Function: $f(x)=x^{3}$

$$
\text { or } \quad y=x^{3}
$$



Identify the parent function, domain and range.
a. $\mathrm{f}(\mathrm{x})=\frac{1}{z+2}-3$
b. $g(t)=5 t^{2}-4 t+8$
c. $h(z)=2 x+4$
d. $\mathrm{j}(\mathrm{p})=2|p-3|+5$
e. $h(x)=2 \sqrt{x}$
f. $g(n)=2^{n}+1$

h.

i.


k.

| $\mathbf{x}$ | $\mathbf{y}$ |
| :--- | :--- |
| -3 | 5 |
| -2 | 2 |
| -1 | 1 |
| 0 | 2 |
| 1 | 5 |

I.

| $x$ | $y$ |
| :--- | :--- |
| -1 | 1 |
| 0 | 2 |
| 1 | 4 |
| 2 | 8 |
| 3 | 16 |

$\mathbf{m}$.

| $\mathbf{x}$ | $\mathbf{y}$ |
| :--- | :--- |
| 0 | -1 |
| 1 | 1 |
| 4 | 3 |
| 9 | 5 |
| 16 | 7 |

