# Honors Algebra II Notes Section 4.1 <br> Graph Exponential Growth Functions 

## VOCABULARY

Exponential Function: $\qquad$

Exponential Growth Model: $\qquad$

Growth Factor: $\qquad$

## Parent Function for Exponential Growth

The function $f(x)=b^{x}$, where $b>1$, is the parent function for the family of exponential growth functions with base $b$. The general shape of the graph of $f(x)=b^{x}$ is shown below.


The domain of $f(x)=b^{x}$ is all real numbers. The range is $y>0$.

EXAMPLE 1 Graph $\mathrm{y}=5 \mathrm{x}$.

| $x$ | $y$ |
| :--- | :--- |

Domain: $\qquad$

Range: $\qquad$


## Example 2 Graph the following exponential functions.

a) $y=1 / 2 \cdot 4 x$
b) $y=-(5 / 2) x$


| $x$ | $y$ |
| :--- | :--- |
|  |  |
|  |  |



EXAMPLE 3 Graph the function. State the domain \& range.
a) $y=4 \cdot 2 x-1-3$
b) $y=1 / 2 \cdot 3 x$




```
Domain:
__________
Domain:
Range:
```

c) $f(x)=3^{x+1}+2$

| $x$ | $y$ |
| :--- | :--- |
|  |  |
|  |  |
|  |  |

Domain:


EXAMPLE4 In 1996, there were 2573 computer viruses and other computer security incidents. During the next 7 years, the number of incidents increased by about $92 \%$ /year.
a) Write an exponential growth model giving the number $n$ of incidents f years after 1996.
b) Graph.
c) About how many incidents were there in 2003?
d) Use the graph to estimate the year when there were about 125,000 computer security incidents.


Compound Interest: $\qquad$

P: initial Principal deposited
r: annual interest Rate
n : Number of times compounded / year
t: Years

EXAMPLE 5 You deposit ș4000 in an account that pays $2.92 \%$ annual interest. Find the balance after 1 year if the interest is compounded with the given frequency.
a) Quarterly
b) Daily

