5/7 Objective: Use the properties of exponents to interpret expressions for exponential functions and to graph exponential functions.

**Bellwork: Fill in the following chart**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x | 300(.97)x | 2500(3)x | 1500(.03)x | 975(1.03)x |
| 0 |  |  |  |  |
| 1 |  |  |  |  |
| 2 |  |  |  |  |

**Review: Identify exponential growth and decay functions**

**Growth Decay**

|  |  |  |
| --- | --- | --- |
| **(1.03)x** |  |  |
| **(1.97)x/10** |  |  |
| **(.97)x** |  |  |
| **(.03)-2x** |  |  |
| **(1.23)-4x** |  |  |
| **(.5)x/2** |  |  |

**Bellwork: Check your answers.**

f(x)=(1/3)2x **Is the Function Equivalent?**

Yes No

|  |  |  |
| --- | --- | --- |
| 3-2x | X |  |
| (1/9)x | X |  |
| (2/3)-x |  | X |
| (3)x/2 |  | X |
| (1/6)x |  | X |
| 9**-x** | X |  |

**5/7 Bellwork: Properties of Exponents: Put a check next to the correct answer**

**Answer1 Answer 2**

|  |  |  |
| --- | --- | --- |
| **aman** | amn | am+n |
| **am/an** | am/n | **am-n** |
| a-n | **1/an** | **-an** |
| a0 | **1** | **0** |
| **(ab)m** | **ambm** | **am+bm** |
| **(am)n** | **amn** | **aman** |
| **(a/b)m** | **am-bm** | **am/bm** |
| **|a2|** | **a2** | **-a2** |

**Notebook/Lesson: End Behavior**

Beginning Example: f(x)=2x and g(x)=(1/2)x

**Sloppy Math**

2∞ →∞

2-∞ →1/2∞→1/∞→0

(1/2)∞ →1/2∞ →1/2∞→0

(1/2)-∞ →2∞→∞

f(x)=ax+b, a>0 g(x)= **-**ax + b, a>0

|  |  |  |  |
| --- | --- | --- | --- |
| a<1 | a>1 | a<1 | a>1 |
| x→∞ f(x) →b | x→∞ f(x) →∞ | x→∞ f(x) →b | x→∞ f(x) →-∞ |
| x→-∞ f(x) →∞ | x→-∞ f(x) →b | x→-∞ f(x) →-∞ | x→-∞ f(x) →b |

**Example 1**

f(x)=**-**(1/3)x-5

fill in the table with the appropriate limit.

|  |  |
| --- | --- |
| a<1 | a>1 |
| x→∞ f(x) →\_\_\_ | x→∞ f(x) →\_\_\_ |
| x→-∞ f(x) →\_\_\_\_ | x→-∞ f(x) →\_\_\_ |

**Example 2**

f(x)=(1/3)x-5

fill in the table with the appropriate limit.

|  |  |
| --- | --- |
| a<1 | a>1 |
| x→∞ f(x) → | x→∞ f(x) → |
| x→-∞ f(x) → | x→-∞ f(x) → |

**Example 3**

f(x)=-3x-5

fill in the table with the appropriate limit.

|  |  |
| --- | --- |
| a<1 | a>1 |
| x→∞ f(x) →n/a | x→∞ **f(x) →-∞** |
| x→-∞ f(x) →n/a | x→-∞ **f(x) →-5** |

**Example 4**

f(x)= 3x-5

fill in the table with the appropriate limit.

|  |  |
| --- | --- |
| a<1 | a>1 |
| x→∞ f(x) →n/a | x→∞ |
| x→-∞ f(x) →n/a | x→-∞ |

**Closure: Complete #9 school city with the appropriate answers.**

