Math 3 2.5 Graphing Radicals Unit 2 Day 5

*SWBAT graph radical functions, state the transformations, and find the domain, range, and end behavior.*

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| **Families of Radical Functions** |
| **Radical function:** A function that can be written in the form $f\left(x\right)=\sqrt[n]{x-h}+k, where a\ne 0$. For even values of n, the domain of a radical function is the real numbers x > h.**Square Root Function:** a function that can be written in the form $f\left(x\right)=a\sqrt{x-h}+k, where a\ne 0$. The domain of a square root function is all real numbers x > h. |

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|  | **SQUARE ROOT** | **RADICAL** |
| **Parent Function** | $$y=\sqrt{x}$$ | $$y=\sqrt[n]{x}$$ |
| **Reflection in x-axis** | $$y=-\sqrt{x}$$ | $$y=-\sqrt[n]{x}$$ |
| **Stretch:** a > 1**Shrink:** 0 < a < 1 | $$y=a\sqrt{x}$$ | $$y=a\sqrt[n]{x}$$ |
| **Translation**Horizontal by hVertical by k | $$y=\sqrt{x-h}+k$$ | $$y=\sqrt[n]{x-h}+k$$ |

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Graphing a Square root function

**EXAMPLE #1:** Graph $y=2\sqrt{x+3}-1$



 Translations:

 Domain:

 Range:

 End Behavior:

**EXAMPLE #2:** Graph $y=-\frac{1}{2}\sqrt{x-1}+4$



 Translations:

 Domain:

 Range:

 End Behavior:

Graphing a cube root function

**EXAMPLE #3:** Graph $y=\sqrt[3]{x-2}$



 Translations:

 Domain:

 Range:

 End Behavior:

**EXAMPLE #4:** Graph $y=1-\frac{1}{2}\sqrt[3]{x+3}$



 Translations:

 Domain:

 Range:

 End Behavior:

**EXAMPLE #5:** The population of Corpus Christi, Texas, between 1970 and 2005 can be modeled by the function $P(x)=75000\sqrt[3]{x-1950}$, where x represents the year. In what year was the population of Corpus Christi 275,000?

 **Solve by Graphing: Solve Algebraically:**

