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| **GRAPHING RADICAL FUNCTIONS** |

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| **VOCABULARY****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.**EX:** $f\left(x\right)=\sqrt{x-2}$**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.**EX:** $f\left(x\right)=2\sqrt{x-3}+1$ |

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| **Families of Radical Functions**

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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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| Translating a Square Root Function |

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| **EXAMPLE #1:** Graph $y=\sqrt{x+2}$$ $**Domain: Range:** **EXAMPLE #2:** Graph $y=\sqrt{x}-4$$ $**Domain: Range:**  |
| Graphing a Square Root Function  |

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