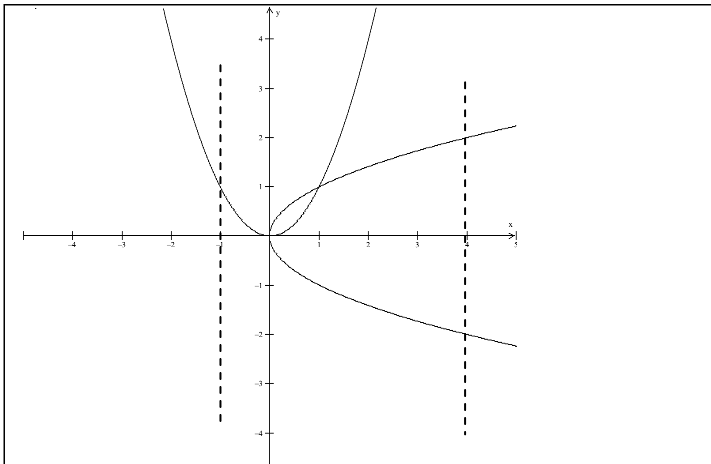
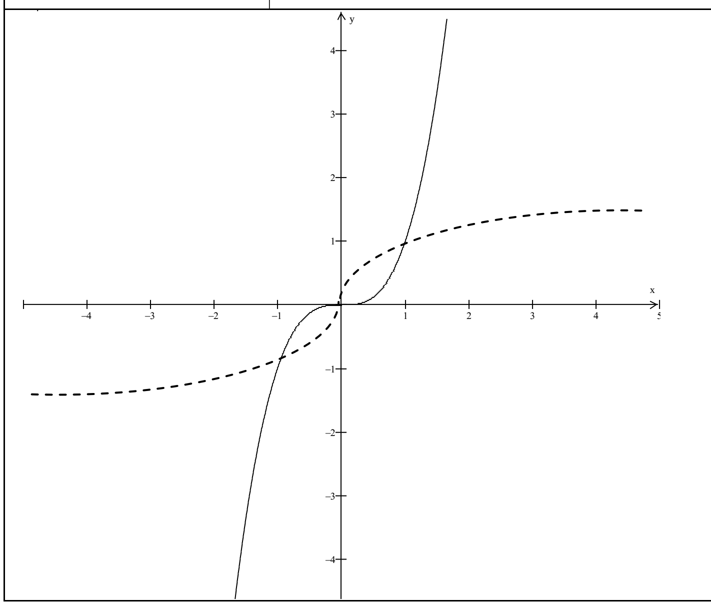
Name___________________________________

Algebra II

Lesson 7-8

Graphing Square Root and Other Radical Functions

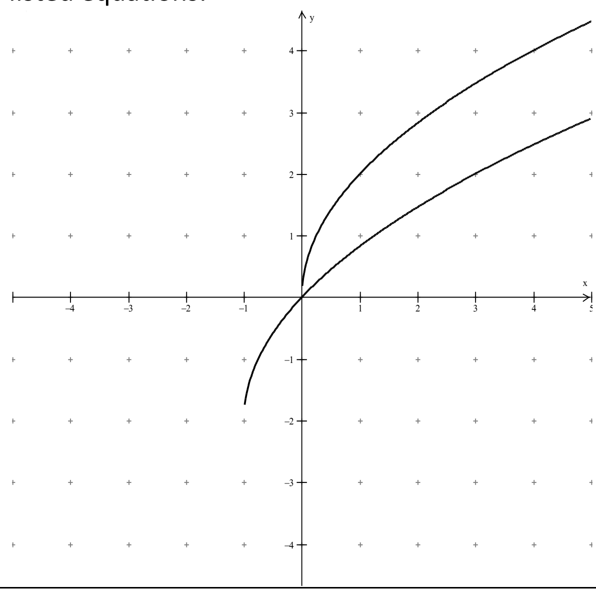
Next, for $f(x) = x^2,\ f^{-1}(x) = \sqrt{x}$

	ID the graphs. What is the domain and range for each $f(x) and\ f^{-1}(x)$? Which is a function which is not (look at vertical line test)? How can I restrict my domain on $f^{-1}(x)$ so to make it a function?
	ID the graphs: $f(x) = x^3\ and\ f^{-1} = \sqrt[3]{x}$ What is the domain and range for each $f(x) and\ f^{-1}(x)$? Which is a function?

As with our absolute value functions and quadratic functions, when graphing radical functions we see translations and shifts within the radical family of functions.

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 h Vertical by k Combined	$y = \sqrt{x-h}$ $y = \sqrt{x} + k$ $y = \sqrt{x-h}$	$y = \sqrt[n]{x-h}$ $y = \sqrt[n]{x} + k$ $y = \sqrt[n]{x-h} + k$

Graphing square root functions is handled in the same fashion that other functions are graphed. Care should be given to equation entry on the calculator. Understand that the calculator sees the equation in terms of order of operation. So an exponent of $\frac{2}{3}$ may be interpreted by a calculator as an exponent of 2 and all divided by 3. Compare the graphs of these two equations entered into the calculator as typed:
2(x+3)^2/3 vs. 2(x+3)^(2/3). While you want the exponent of 2/3 the first entry is seen as 2(x+3)^2 (a parabola) all divided by 2!

ID the given graphs: $y = 2\sqrt{x}$ $y = 2\sqrt{x+1} - 2$ Remember the significance of $h \text{ and } k$. What do we see in our shifts? Horizontal? Vertical? What are the domains for each of these graphs?	Notice the shift in the graph but the same general look for the two listed equations: 

ID the given graphs: $y = -\sqrt[3]{x}$ *(cube root with reflection)* $y = 3 - \sqrt[3]{x+1}$ Remember the significance of $h \text{ and } k$. What do we see in our shifts? Horizontal? Vertical? What are the domains for each of these graphs?