Slide 1

11-3

I can graph the inverse functions of

$$f(x) = x^2 \quad \text{and} \quad f(x) = x^3$$

Slide 2

Find the inverse algebraically then graph it.

$$f(x) = x^2$$

x	f(x)		f(x)	x

Slide 3

$f(x) = x^2$

x	f(x)
-3	9
-2	4
-1	1
0	0
1	1
2	4

Inverse $\sqrt{x}$

f(x)	x
0	0
1	1
4	2

$f(x) = \sqrt{x}$

Domain: $[0, \infty)$

Range: $[0, \infty)$

Slide 4

$f(x) = x^3$ Inverse $f(x) = \sqrt[3]{x}$

x	f(x)
-3	-27
-2	-8
-1	-1
0	0
1	1
2	8

f(x)	x
-27	-3
-8	-2
-1	-1
0	0
1	1
8	2

Domain: $(-\infty, \infty)$

Range: $(-\infty, \infty)$

Describe why the domain is different for the two parent graphs.

Because negatives cannot go in or out of even roots

Square root

$$\pm a\sqrt{x \pm h} \pm k$$

- stretch
- $-$: Flip across x-axis
- $+$: LEFT
- $-$: RIGHT (x's lie!)
- $+$: up
- $-$: Down

key points
Vertex
Right 1 Up 1
Right 4 Up 2

Cube root

$$\pm a\sqrt[3]{x \pm h} \pm k$$

- stretch
- $-$: Flip across x-axis
- $+$: Left
- $-$: Right
- $+$: up
- $-$: Down

Key points
Vertex
Right/left 1 Up/down 1
Right/left 8 Up/down 2
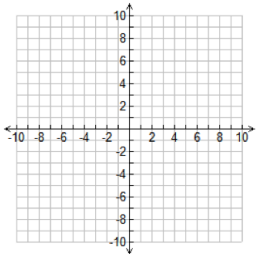
Stretches change: Up/downs

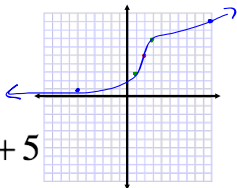Solve for the inverse algebraically then graph it.

$$f(x) = x^3$$

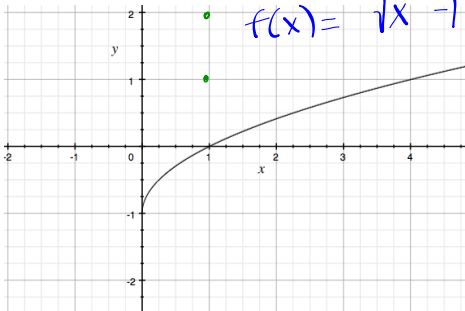| x	f(x)		f(x)	x

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Task Graphing Inverse Functions

Check for understanding

#1 Graph the function

$$f(x) = 2\sqrt[3]{x - 2} + 5$$

#2 Write an equation for the graph

$$f(x) = \sqrt{x} - 1$$

1. $\sqrt[3]{x+5}$