Unit 7 Inverse Functions – Graphing + Domain/Range

Classwork / Homework

For each of the relations given, fil in the information requested. You should be able to fill in all that information BEFORE graphing it, but after you graph it, check that your graph matches the information given.

Then, find the inverse of the relation. You should be able to fill in the information about the inverse before graphing it, but then graph it to a(check your information) and b) see the reflection over y = x.

It may help to use two different colored pencils for each graph.

		THE INVE	ERSE				- 6				
(1,	,3), (2, 5), (–2, 0)			-6	-5 -4	-3 -2	5 4 3 2 1 2 -1 0		2 3	4 5	6
Fun	ction or Relation	Function or F	Relation				-2-		+		
D:		D:		H			-4-				
R:		R:					-6	,			

		THE INV	VERSE				\square	- 6	4				T
(–	4,1), (1,4), (3,4)				-6 -5	5 -4 -	-3 -2	-1 0		2	3 4	5	6
Fun	ction or Relation	Function or	Relation				+	-2				+	+
D:		D:						-3	\mathbb{H}			+	
R:		R:		Ŀ				-6					

	$y = \frac{1}{2}x + 2$		VERSE				- 6			\square	
	$y = \frac{1}{2}x + 2$						- 5		\vdash	++	+
							3			\square	
							2				
				-	5 -5 -4	1 - 3 - 2	2 -1 0		2 3	4 5	6
							-1-1-	-i-	ĨĨ	ŤŤ	Ť
Fund	ction or Relation	Function or	Relation				-2-		\vdash	++	++
D:		D:					-4-				
		5.					-5-		\vdash	++	+
R:		R:					-6	,			

	1 _	THE INV	VERSE					6			
	$y = -\frac{1}{3}x + 7$				\vdash	++	++:	5	++	+	
							T:	3			
				-	6 -5 -	-4 -3 -	2 -1 9		2 3	4	5 6
		–		- E	ÌÌ		Ťİ.	'††	Ĩ		Ĺ
Fund	ction or Relation	Function or	Relation					3			
D:		D:						+++			
R:		R:						6			

v	=2(x-1)+3		VERSE					- 6	•				\square
2					\vdash	+	\vdash	- 5	\mathbb{H}	+	+	+	++
							\square	$\frac{1}{3}$	\square				\square
					\vdash	+	\vdash	+2	\vdash	+	+	+	++
				4		-4 -			\square			5	—
					0 - 3	-4 -	3 -2	-1-0	H	1	3 4	-	-
Fund	ction or Relation	Function or	Relation		\square	+	\vdash	2	\mathbb{H}	+	+	+	+
D:		D:					\square	-3	\square				\square
					\vdash		\vdash		\vdash		+	+	++
R:		R:						-6	+				

	$y = x^2 + 2$		/ERSE	6
	2			5
				4
				2
Fund	ction or Relation	Function or	Relation	
D:		D:		
R:		R:		

v	$=(x+3)^2+1$	THE IN\	VERSE			6			
					+++	5	++		++
						2			
				-6 -	-5 -4 -3	-2 -1 0	1 2 3	3 4 5	6
				- H		-1-1-	ŤŤ		Ť
Fund	ction or Relation	Function or	Relation			-2			
D:		D:				-4			
R:		R:				-6			

	$y = -x^2 - 2$	THE INV	VERSE				- 6	•		\square	\square
										Ħ	\pm
							3			Ħ	
				4			-1				
				-(5 -5 -4	4 -3 -2	-1 0	1	2 3	4 5	6
Fund	ction or Relation	Function or	Relation				-2-			\square	+
D:		D:					-3-				
R:		R:					-6	,			

v	$=(x-3)^3+2$	THE INV	VERSE	6	_
	、 <i>,</i>			5	\neg
				4 3	
				2	\neg
					*
					\neg
Fund	ction or Relation	Function or	Relation	-2	
D:		D:			
R:		R:			_

1	$y = -(x - 2)^3$	THE INV	VERSE	6
				5
				4
Fund	ction or Relation	Function or	Relation	-2
D:		D:		-4
R:		R:		

	$y = \sqrt{x - 3}$	THE IN\	VERSE					6				\square
					Ħ	\pm	\pm	4				\pm
					╞			3				
					++	++	++	1	$\left \right $	+	+	+
				-	6 -5	-4 -3	-2 -1	0	1 2	3 4	5	6
Fun	ction or Relation	Function or	Relation					-2				\square
D:		D:					++	4				
R:		R:						-6				

		THE IN	VERSE					- 6				
$y = \frac{1}{2}$	$\frac{1}{2}\sqrt{-x} + 4$			⊢	++	+	-	- 5	++	+	\vdash	+
				F	\square			-4-	\square			\square
				H	+	+	+	- 2	++	+	$\left \right $	+
				4			-2 -		Ц	3 4	ļ	
				H	-0 -3	-4 -3	-2 -	-1-	11			+
Function	or Relation	Function o	r Relation		++	+	+	-2	++	+	\vdash	++
Domain:		Domain:						-3				
Range:		Range:						-6				

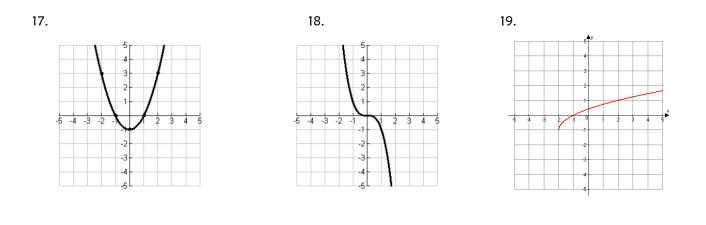
$y = -2\sqrt{x+2} - 3$		THE IN	VERSE					- 6					
					\mathbb{H}	+	\mathbb{H}	- 5	\vdash	+		+	\square
					\square	_	\square	3		-		-	\square
				-	6 -5	-4 -	3 -2	-1 0	1	2 3	3 4	5	6
Function or Relation		Function of	r Relation			-	\square	-1-	\square	-		-	H
Domain:		Domain:				-		3- 4- 5-				-	
Range:		Range:						-6	,				

$y = -\sqrt[3]{-x-6}$		THE IN	VERSE	F				- 6		\mp		
								- 5 - 4 - 3		+		
					-6 -5	-4 -	3 -2	-1 0	2 3	4	5 (•
Function or Relation		Function or	· Relation					-1-		+		
Domain:		Domain:							\square	+	\square	
Range:		Range:						-5-		\pm		

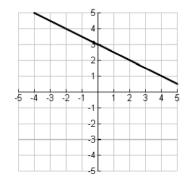
For each of the following, f(x) is given. Determine if f(x) is a function, then give its domain and range. Then, get $f^{-1}(x)$, determine if it's a function and what it's domain and range is. Then sketch both to confirm they are reflections over the line y = x.

1.
$$(2, 5), (-2, 5), (6, -4), (6, 0)$$
9. $(-3, 7), (4, -2), (6, 5), (4, 1)$ 2. $y = -8x + 16$ 10. $y = -\frac{5}{8}x + 10$ 3. $y = \frac{1}{2}x + 8$ 11. $y = x^2 + 5$ 4. $y = x^2 - 4$ 12. $y = (x + 3)^2$ 5. $y = (x - 6)^2$ 13. $y = 16(x - 1)^2 + 5$ 6. $y = \frac{1}{2}(x - 1)^3 + 6$ 14. $y = -x^3 + 4$ 7. $y = \sqrt{x - 2}$ 15. $y = \sqrt{-x + 5} - 2$ 8. $y = \frac{1}{4}\sqrt{x} + 6$ 16. $y = -\frac{1}{3}\sqrt{x - 1}$

For each of the graphs below, write the equation of f(x), then write the equation of and graph $f^{-1}(x)$



20.



21.

