Mastery Checklist
Inverse Function

In order to prove Mastery for this concept you must be able complete the following all by **yourself.** No help from Notes, Partners or Teacher. Use all other problems to practice and test yourself with the following:

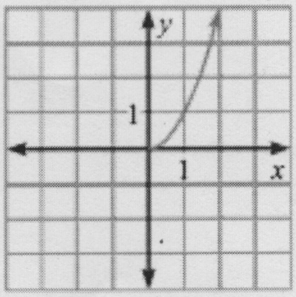
- ☐ Complete # 14 , 20 on the Star and Cloud worksheet
- ☐ Complete #35 & one problem from Level ** on "Graphing Inverse Functions" (Orange)
- ☐ Complete two Level ** on "6A Inverse Function" (Green)
- ☐ Complete # 4 & 7 on "Inverse Function Worksheet"
- ☐ Create a Mind Map for Inverse Functions

LT: 6A
Graphing Inverse Functions

Level *

VISUAL THINKING Match the graph with the graph of its inverse.

33.



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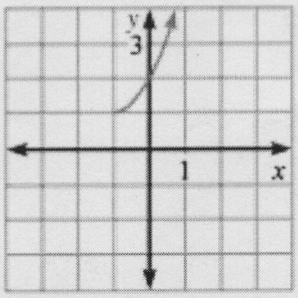

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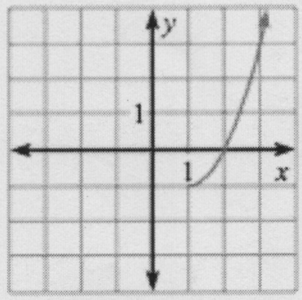
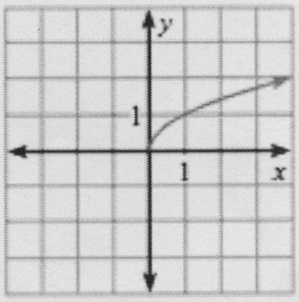


A.



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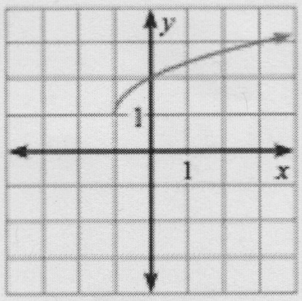
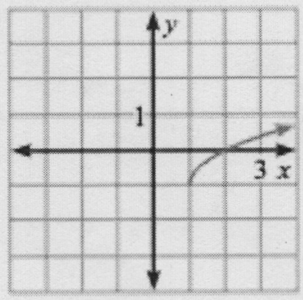


C.



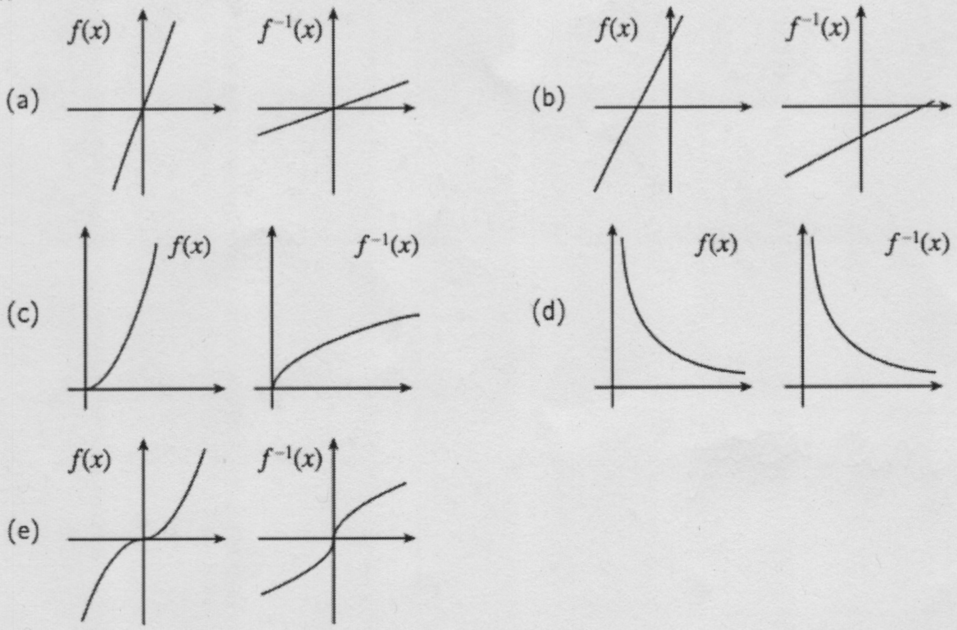
Level **

4. For each of the following, sketch the graph of $f(x)$ and use it to sketch the graph of $f^{-1}(x)$:

(a) $f(x) = 3x$, (b) $f(x) = 2x + 5$, (c) $f(x) = x^2$ for $x \geq 0$,
(d) $f(x) = 1/x$ for $x > 0$, (e) $f(x) = x^3$.

Answer Key
Level *
33.) A
34.) C
35.) B
Level **

4.



LT: 6A Inverse Function

Check to see if the following Functions are inverses of each other.

Level *

9. $f(x) = 3x - 5$

$g(x) = \frac{x+5}{3}$

10. $f(x) = x - 10$

$g(x) = x + 10$

11. $f(x) = \frac{2x-3}{5}$

$g(x) = \frac{3x-5}{3}$

12. $f(x) = 2x$

$g(x) = \frac{2}{x}$

13. $f(x) = 3x - 7$

$g(x) = \frac{1}{3}x + 7$

14. $f(x) = 4(x + 2)$

$g(x) = \frac{x}{4} - 2$

Level **

1) $g(x) = 4 - \frac{3}{2}x$

$f(x) = \frac{1}{2}x + \frac{3}{2}$

2) $g(n) = \frac{-12 - 2n}{3}$

$f(n) = \frac{-5 + 6n}{5}$

3) $f(n) = \frac{-16 + n}{4}$

$g(n) = 4n + 16$

4) $f(x) = -\frac{4}{7}x - \frac{16}{7}$

$g(x) = \frac{3}{2}x - \frac{3}{2}$

5) $f(n) = -(n+1)^3$

$g(n) = 3 + n^3$

6) $f(n) = 2(n-2)^3$

$g(n) = \frac{4 + \sqrt[3]{4n}}{2}$

7) $f(x) = \frac{4}{-x-2} + 2$

$h(x) = -\frac{1}{x+3}$

8) $g(x) = -\frac{2}{x} - 1$

$f(x) = -\frac{2}{x+1}$

Answers
Level *

9. $f(x) = 3x - 5$

$g(x) = \frac{x+5}{3}$

yes

10. $f(x) = x - 10$

$g(x) = x + 10$

yes

11. $f(x) = \frac{2x-3}{5}$

$g(x) = \frac{3x-5}{3}$

no

12. $f(x) = 2x$

$g(x) = \frac{2}{x}$

no

13. $f(x) = 3x - 7$

$g(x) = \frac{1}{3}x + 7$

no

14. $f(x) = 4(x + 2)$

$g(x) = \frac{x}{4} - 2$

yes

Level **

1) $g(x) = 4 - \frac{3}{2}x$

$f(x) = \frac{1}{2}x + \frac{3}{2}$

No

2) $g(n) = \frac{-12 - 2n}{3}$

$f(n) = \frac{-5 + 6n}{5}$

No

3) $f(n) = \frac{-16 + n}{4}$

$g(n) = 4n + 16$

Yes

4) $f(x) = -\frac{4}{7}x - \frac{16}{7}$

$g(x) = \frac{3}{2}x - \frac{3}{2}$

No

5) $f(n) = -(n+1)^3$

$g(n) = 3 + n^3$

No

6) $f(n) = 2(n-2)^3$

$g(n) = \frac{4 + \sqrt[3]{4n}}{2}$

Yes

7) $f(x) = \frac{4}{-x-2} + 2$

$h(x) = -\frac{1}{x+3}$

No

8) $g(x) = -\frac{2}{x} - 1$

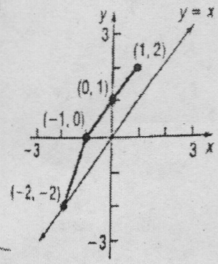
$f(x) = -\frac{2}{x+1}$

Yes

Notes key features
Piece-wise Function

Graph the inverse of the following 1 to 1 function:

18.)



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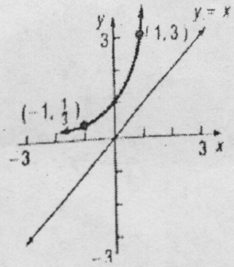

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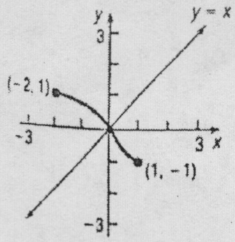

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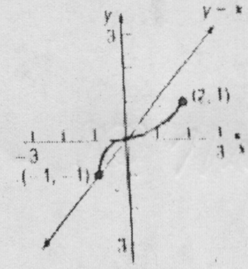


Given that the following functions are 1to1, then find the inverse function:

12.) $f(x)=\frac{2}{3+x}$

13.) $f(x)=\frac{2x}{x-1}$

14.) $f(x)=\frac{3x+4}{2x-3}$

15.) $f(x)=\frac{2x-3}{x+4}$

16.) $f(x)=2\sqrt[3]{x}$

17.) $f(x)=\frac{4}{\sqrt{x}}$

Complete the Blue or Purple Question around The room

Given that the following functions are 1to1, then find the inverse function:

6.) $f(x) = 3x$

7.) $f(x) = 4x+2$

8.) $f(x)= x^3-1$

9.) $f(x)=\frac{4}{x}$

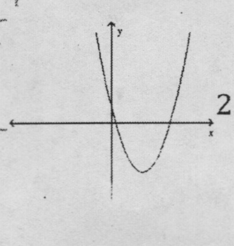
10.) $f(x) =\frac{1}{x} -2$

11.) $f(x)= \frac{4}{x+2}$

Complete the Yellow Question around The room

Start Here: Identify the different types of Relations are listed here and explain why:

1.)



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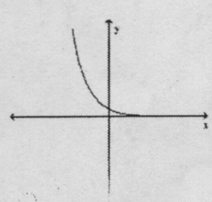

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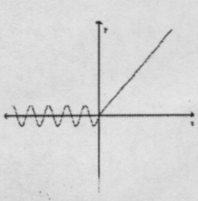


4.) {(1,3),(2, 3), (5,6)(4,8)}

5.) {(0,6),(2,5),(4,4),(6,3)}

1.) Function
2.) One-to-One Function
3.) Relation
4.) Function.
5.) One-to-One Function.

6.) $y=3x \longrightarrow \frac{x}{3}=\frac{3y}{3}$

$\frac{x}{3}=y$

7.) $y=4x+2 \rightarrow x=4y+2$; -2, -2

$\frac{x-2}{4}=\frac{4y}{4}$

$\boxed{\frac{x-2}{4}=y}$

8.) $y=x^3-1 \rightarrow x=y^3-1$; $+1$, $+1$

$\sqrt[3]{x+1}=\sqrt[3]{y^3}$

$\boxed{\sqrt[3]{x+1}=y}$

9.) $y=\frac{4}{x} \rightarrow y.x=\frac{4}{\cancel{y}}\cdot \cancel{y}$

$\frac{yx}{x}=\frac{4}{x}$

$\boxed{y=\frac{4}{x}}$

10.) $y=\frac{1}{x}-2 \rightarrow x=\frac{1}{y}-2$; $+2$, $+2$

$y(x+2)=\left(\frac{1}{y}\right)\cdot y$

$\frac{y\cancel{(x+2)}}{\cancel{x+2}}=\frac{1}{x+2}$

$\boxed{y=\frac{1}{x+2}}$

11.) $y=\frac{4}{x+2} \rightarrow y+2\,(x)=\left(\frac{4}{\cancel{y+2}}\right)y+2$

$(y+2)x=4$

$y+2=\frac{4}{x}$

$\boxed{y=\frac{4}{x}-2}$

12.) $y=\frac{2}{3+x} \rightarrow x=\frac{2}{3+y}$

$x(3+y)=2$

$3+y=\frac{2}{x}$

$\boxed{y=\frac{2}{x}-3}$

13.) $y=\frac{2x}{x-1} \longrightarrow x=\frac{2y}{y-1}$

$x(y-1)=2y$

$xy-x=2y$

$-x=2y-xy$

$-\cancel{x}=y(2-x)$

$\boxed{\frac{-x}{2-x}=y}$

14.) $y=\frac{3x+4}{2x-3} \rightarrow x=\frac{3y+4}{2y-3}$

$x(2y-3)=3y+4$

$2yx-3x=3y+4$

$2yx-3y=4+3x$

$y(2x-3)=4+3x$

$\boxed{y=\frac{3x+4}{2x-3}}$

15.) $y=\frac{2x-3}{x+4} \rightarrow x=\frac{2y-3}{y+4}$

$x(y+4)=2y-3$

$xy+4x=2y-3$

$xy-2y=-4x-3$

$y(x-2)=-4x-3$

$\boxed{y=\frac{-4x-3}{x-2}}$

16.) $y = 2\sqrt[3]{x} \rightarrow x = 2\sqrt[3]{y}$

$$\left(\frac{x}{2}\right)^3 = \left(\sqrt[3]{y}\right)^3$$

$$\left(\frac{x}{2}\right)^3 = y$$

$$\boxed{y = \frac{x^3}{8}}$$

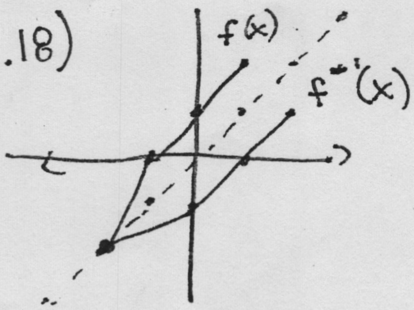
17.) $y = \frac{4}{\sqrt{x}} \rightarrow x = \frac{4}{\sqrt{y}}$

$$x\sqrt{y} = 4$$

$$\left(\sqrt{y}\right)^2 = \left(\frac{4}{x}\right)^2$$

$$\boxed{y = \left(\frac{4}{x}\right)^2 = \frac{16}{x^2}}$$

18)



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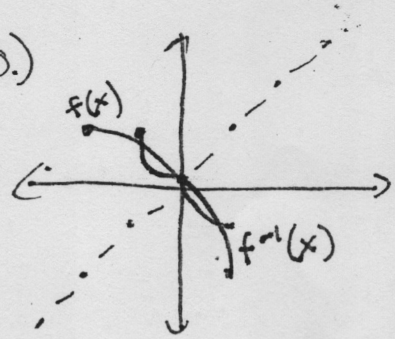

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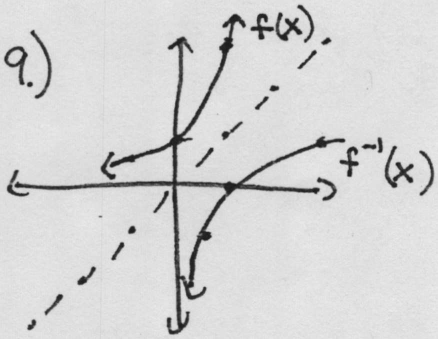

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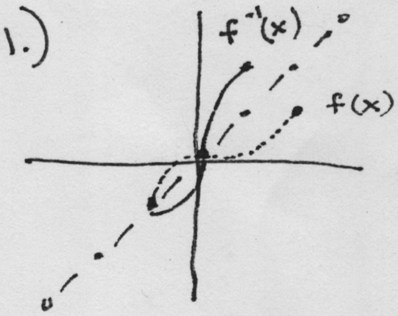

ID: 1

College Algebra

Name____________________________________

Inverse Function Worksheet

Date________________ Period____

Find the inverse of each function.

1) $g(x) = -\dfrac{1}{x-1} + 3$

2) $f(x) = x - 6$

3) $g(x) = -\dfrac{2}{5}x - 2$

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

5) $g(x) = \dfrac{-4 + \sqrt[3]{4x}}{2}$

6) $f(x) = \dfrac{4}{5}x - 4$

7) $h(n) = \dfrac{1}{n-2} - 2$

8) $g(x) = -\sqrt[5]{x} - 3$

9) $g(x) = -2x^5 - 2$

10) $f(x) = -\dfrac{1}{x} - 1$

ID: 1

College Algebra

Name________________________________

Inverse Function Worksheet

Date________________ Period____

Find the inverse of each function.

1) $g(x) = -\dfrac{1}{x-1} + 3$

$g^{-1}(x) = -\dfrac{1}{x-3} + 1$

2) $f(x) = x - 6$

$f^{-1}(x) = x + 6$

3) $g(x) = -\dfrac{2}{5}x - 2$

$g^{-1}(x) = -5 - \dfrac{5}{2}x$

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

$f^{-1}(x) = (x-2)^5 - 2$

5) $g(x) = \dfrac{-4 + \sqrt[3]{4x}}{2}$

$g^{-1}(x) = 2(x+2)^3$

6) $f(x) = \dfrac{4}{5}x - 4$

$f^{-1}(x) = 5 + \dfrac{5}{4}x$

7) $h(n) = \dfrac{1}{n-2} - 2$

$h^{-1}(n) = \dfrac{1}{n+2} + 2$

8) $g(x) = -\sqrt[5]{x} - 3$

$g^{-1}(x) = -(x+3)^5$

9) $g(x) = -2x^5 - 2$

$g^{-1}(x) = \sqrt[5]{\dfrac{-x-2}{2}}$

10) $f(x) = -\dfrac{1}{x} - 1$

$f^{-1}(x) = -\dfrac{1}{x+1}$

Mind Map
Geometric Series & Sequence

Task 1:
Review your notes/Quick Check/Unit 5 Test and write down all key ideas/concepts/vocabulary/examples for LT: 5B

Task 2:
Group and Connect all your concepts together

Task 3:
Label each Connection by why they are connected. For example:

$\text{Quadratic} \xrightarrow{\text{can have}} \text{Real Roots} \xrightarrow{\text{are}} \text{x-int}$

Task 4:
Add in examples and visuals where they fit.

Task 5:
Review Checklist below and make sure that your Mind Map contains everything you need.

- ☐ Contains all of theses Concepts/Vocabulary

Geometric Sequence	Geometric Series	Sigma Notation
General Term	Sum	Common Ratio
Nth term	Elements	Formula
Definition		

- ☐ All Connections are labeled
- ☐ Contains Example Problems
- ☐ Contains Visuals
- ☐ Review Mind Map on the Backside and see if you need to adjust or add anything.

What is missing?
How can you make this better?