Review 7.6 & 7.7 Test

Name Answers Period

1. $f(x)=(3x-4)^2$ What is the inverse $y = \frac{\pm\sqrt{x}+4}{3}$

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

$\sqrt{x} = \sqrt{(3y-4)^2}$

$\pm\sqrt{x} = 3y-4$

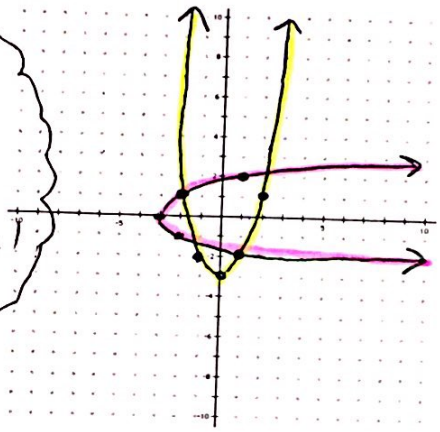
$+4 \quad +4$

$\frac{\pm\sqrt{x}+4}{3} = \frac{3y}{3}$

Is it a function? no Explain the ± means that there will be two outputs

2. Given $f(x) = x^2 - 3$, graph the function and it's inverse. Is the inverse a function? Explain.

the inverse is not a function because it doesnt pass the vertical line test



x	y
-2	1
-1	-2
0	-3
1	-2
2	1

Inverse

x	y
1	-2
-2	-1
-3	0
-2	1
1	2

Let $f(x)=2x^2$ and $g(x)=3x-1$. Perform each function operation. Then find the domain of problems 3 – 6.

3. $f(x) + g(x) =$

$(2x^2) + (3x-1)$

$2x^2+3x-1$

4. $f(x) - g(x) =$

$(2x^2) - (3x-1)$

$2x^2-3x+1$

5. $f(x) \cdot g(x) =$

$(2x^2)(3x-1)$

$6x^3-2x^2$

6. $\frac{f(x)}{g(x)} =$

$\frac{2x^2}{3x-1}$

Domain: $x \neq 1/3$

7. $f(g(x)) =$

$2(3x-1)^2$

$2(3x-1)(3x-1)$

$2(9x^2-6x+1)$

$18x^2-12x+2$

8. $f(f(x)) =$

$2(2x^2)^2$

$2(2x^2)(2x^2)$

$8x^4$

9. $g(f(x))$ = $3(2x^2) - 1$

$\boxed{6x^2 - 1}$

10. $g(g(x))$ =

$3(3x - 1) - 1$

$9x - 3 - 1 = \boxed{9x - 4}$

Let $f(x) = -2x$ and $g(x) = 3x^2 + x$. Perform each function.

$(g \circ f)(5)$

11. ~~$f \circ g(5)$~~

$-2(5) = -10$

$3(-10)^2 + (-10)$

$3(100) - 10$

$\boxed{290}$

12. $(f \circ g)(5)$

$3(5)^2 + 5$

$3(25) + 5$

80

$-2(80)$

$\boxed{-160}$

13. $f(g(-2))$

$3(-2)^2 + (-2)$

$3(4) - 2$

10

$-2(10)$

$\boxed{-20}$

14. $g(f(-2))$

$-2(-2)$

4

$3(4)^2 + 4$

$3(16) + 4$

$\boxed{52}$

Find the inverse. Then determine if the inverse is a function.

15. $y = -5x + 2$

$x = -5y + 2$

$-2 \quad -2$

$\frac{x - 2}{-5} = \frac{-5y}{-5}$

$\boxed{y = \frac{x - 2}{-5}}$

yes its a function every input has one output

16. $f(x) = 7x^2 - 21$

$x = 7y^2 - 21$

$+21 \quad +21$

$\frac{x + 21}{7} = \frac{7y^2}{7}$

$\sqrt{\frac{x + 21}{7}} = \sqrt{y^2}$

$\boxed{y = \pm\sqrt{\frac{x + 21}{7}}}$

Not a function ± means two outputs

17. $f(x) = x^3 - 7$

$x = y^3 - 7$

$+7 \quad +7$

$x + 7 = y^3$

$\sqrt[3]{x + 7} = \sqrt[3]{y^3}$

$\boxed{y = \sqrt[3]{x + 7}}$

yes its a function every input has one output

18. $y = 16x^4$

$\frac{x}{16} = \frac{16x^4}{16}$

$\frac{x}{16} = y^4$

$\sqrt[4]{\frac{x}{16}} = \sqrt[4]{y^4}$

$\boxed{y = \pm\sqrt[4]{\frac{x}{16}}}$

Not a functi ± means two outputs

19.

X	-1	0	1	4
Y	1	0	1	16

X	1	0	1	16
y	-1	0	1	4

Not a function, 1 has two outputs

20. $f(x) = 32x^5 + 1$

$x = 32y^5 + 1$

$-1 \quad -1$

$\frac{x - 1}{32} = \frac{32y^5}{32}$

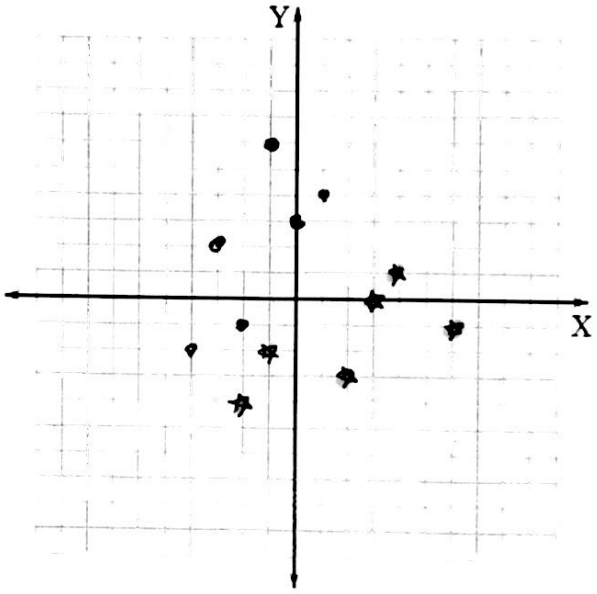
$\sqrt[5]{\frac{x - 1}{32}} = \sqrt[5]{y^5}$

$\boxed{y = \sqrt[5]{\frac{x - 1}{32}}}$

yes its a function every input has one output

21. Graph the following relation and its inverse on the same graph. Use a dot for the relation and a star for its inverse.

x	-1	-4	0	-2	1	-3
y	6	-2	3	-1	4	2



22. Use the graph below to graph it's inverse.

X	Y
6	-2
4	-4
8	-4
0	-8
10	-6

Inverse

X	Y
-2	6
-4	4
-4	8
-8	0
-6	10