Algebra II/ Trig: 2.4-2.5 QUIZ

Let $f(x) = 2x + 7$ and $g(x) = -3x - 5$. Find each new function and state any domain restrictions.

1. $g + f$

$-3x - 5 + 2x + 7$

$-x + 2$

2. $f - g$

$2x + 7 - (-3x - 5)$

$2x + 7 + 3x + 5$

$5x + 12$

3. $\frac{g}{f}$

$$\frac{-3x-5}{2x+7}, \quad x \neq -\frac{7}{2}$$

$2x+7=0$

$-7 \quad -7$

$\frac{2x}{2} = \frac{-7}{2}$

$x = -\frac{7}{2}$

4. $f \bullet g$

$(2x+7)(-3x-5)$

$-6x^2-10x-21x-35$

$-6x^2-31x-35$

5. $f \circ g$

$2(-3x-5)+7$

$-6x-10+7$

$\boxed{-6x-3}$

6. $(f \circ g)(-2)$

$2(-3(-2)-5)+7$

$2(6-5)+7$

$2(1)+7$

$2+7=\boxed{9}$

7. $(g \circ g)(3)$

$-3(-3(3)-5)-5$

$-3(-9-5)-5$

$-3(-14)-5$

$42-5$

$\boxed{37}$

8. $\frac{f}{g}$

$\boxed{\frac{2x+7}{-3x-5}, x \neq -\frac{5}{3}}$

$-3x-5=0$

$+5 \quad +5$

$-3x=5$

$\frac{-3x}{-3} = \frac{5}{-3}$

$x = -\frac{5}{3}$

Find the inverse of each function and tell whether the inverse is a function or not.

9. $f = \{(0,2),(1,3),(4,4),(7,5)\}$

$f^{-1} = \{(2,0),(3,1),(4,4),(5,7)\}$

Yes

10. $f = \{(-1,2),(3,3),(4,2),(-7,5)\}$

$f^{-1} = \{(2,-1),(3,3),(2,4),(5,-7)\}$

No

For each equation find the inverse. Then use composition to verify that the equation you found is the inverse.

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

$x = -\frac{1}{2}y + 3$

$-3 \quad -3$

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

$f^{-1}(x) = -2x + 6$

$f \circ f^{-1} = -\frac{1}{2}(-2x + 6) + 3$

$= x - 3 + 3$

$= \boxed{x}$

$f^{-1} \circ f = -2(-\frac{1}{2}x + 3) + 6$

$= x - 6 + 6$

$= \boxed{x}$

12. $f(x) = \frac{1}{3}x - 1$

$x = \frac{1}{3}y - 1$

$+1 \quad +1$

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

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

$f \circ f^{-1} = \frac{1}{3}(3x + 3) - 1$

$= x + 1 - 1$

$= \boxed{x}$

$f^{-1} \circ f = 3(\frac{1}{3}x - 1) + 3$

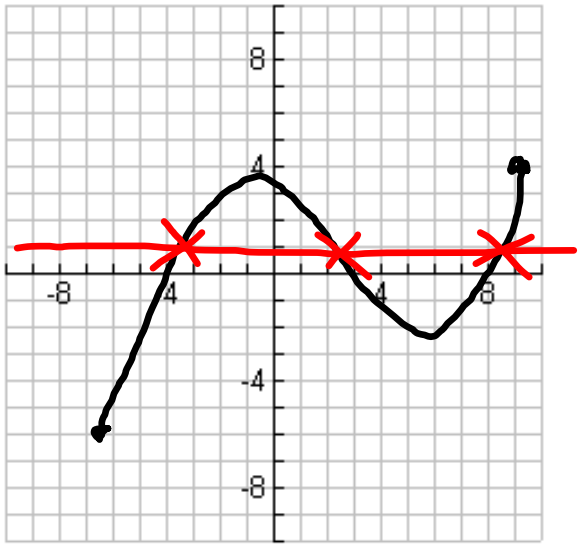
$= x - 3 + 3$

$= \boxed{x}$

Determine whether the inverse graphed is a function

13.

No



14.

Yes