

Name _____

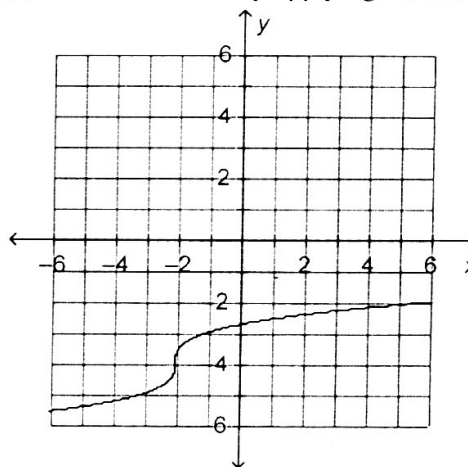
Secondary 3 Honors SAGE Review Teacher _____ Date _____ Period _____

F.BF.3, 4a

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- _____ 1. Compare the graph of $g(x) = x^2 + 6$ with the graph of $f(x) = x^2$.
- The graph of $g(x)$ is wider.
 - The graph of $g(x)$ is narrower.
 - The graph of $g(x)$ is translated 6 units down from the graph of $f(x)$.
 - The graph of $g(x)$ is translated 6 units up from the graph of $f(x)$.
- _____ 2. Use this description to write the quadratic function in vertex form:
The parent function $f(x) = x^2$ is vertically compressed by a factor of $\frac{1}{2}$, translated 11 units left and 5 units down.
- $g(x) = \frac{1}{2}(x - 11)^2 - 5$
 - $g(x) = \frac{1}{2}(x + 11)^2 - 5$
 - $g(x) = 2(x - 11)^2 - 5$
 - $g(x) = 2(x + 11)^2 - 5$
- _____ 3. The graph of $g(x)$ is shown below. The graph of $g(x)$ can be obtained by applying horizontal and vertical shifts to the parent function $f(x) = \sqrt[3]{x}$. What is $g(x)$?



- $g(x) = \sqrt[3]{x - 2} + 4$
 - $g(x) = \sqrt[3]{x + 2} - 4$
 - $g(x) = \sqrt[3]{x + 4} - 2$
 - $g(x) = \sqrt[3]{x - 4} + 2$
- _____ 4. Which is the inverse of $f(x) = (2x + 1)^3 - 4$?
- $f^{-1}(x) = \sqrt[3]{2x + 1} + 4$
 - $f^{-1}(x) = \frac{\sqrt[3]{x + 4}}{2} - 1$
 - $f^{-1}(x) = \frac{\sqrt[3]{x + 4} - 1}{2}$
 - $f^{-1}(x) = \sqrt[3]{x + 4} - \frac{1}{2}$
- _____ 5. Which is the equation of the inverse of $f(x) = \frac{1}{x + 1}$?
- $f^{-1}(x) = \frac{1}{x} + 1$
 - $f^{-1}(x) = \frac{1}{x} - 1$
 - $f^{-1}(x) = 1 - \frac{1}{x}$
 - $f^{-1}(x) = -1 - \frac{1}{x}$
- _____ 6. Which is the inverse of $y = x - 3$?
- $y = \frac{1}{x - 3}$
 - $y = -x - 3$
 - $y = -x + 3$
 - $y = x + 3$

14. Find the inverse of the function.

$$y = \ln(x - 2) + 2$$

15. The formula for converting temperatures from kelvins K to degrees Fahrenheit F is $F = \frac{9}{5}K - 459.67$. Find the inverse of this function, and find the equivalent temperature of -121°F in kelvins.

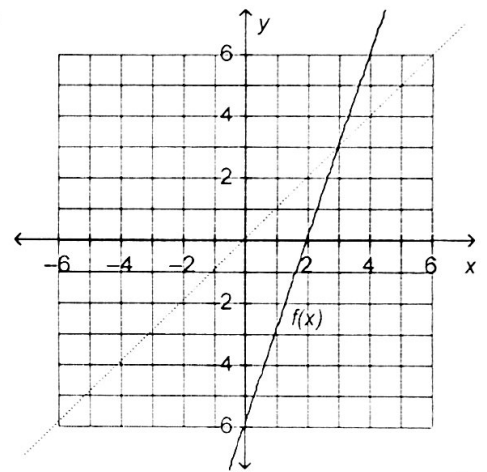
16. Find the inverses of $f(x) = 3x - 9$ and $h(x) = \frac{1}{3}x + 3$. Show your work. What do you notice?

17. The graph of $f(x) = 3x - 6$ is shown, along with the dashed line $y = x$.

a. Find $g(x)$, the inverse of $f(x)$. Show your work.

b. Graph $g(x)$.

c. How are the graphs of $f(x)$ and $g(x)$ related to the line $y = x$?



Problem

18. Martha incorrectly graphed the function $g(x) = -\frac{1}{4}(x - 4)^2 + 3$ using transformations of the graph of $f(x) = x^2$. First she stated what transformations to perform, and then she drew the graph. Identify and correct any errors.

- (1) A vertical shrink by a factor of $\frac{1}{4}$
- (2) A shift left 4 units
- (3) A shift up 3 units

