

7D Functions Stretching & Shifting

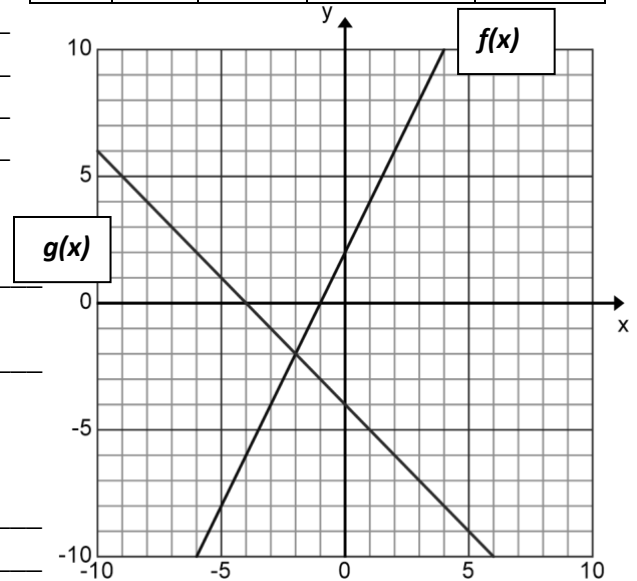
Name: _____ Per: _____

SHOW YOUR WORK IN PENCIL

Due: January 15th / 16th

- Use the functions **in the graph** to answer the questions.
 - Fill in the table for $f(x)$ and $g(x)$ from the graph below.
 - What is the slope for $f(x)$: _____
 - What is the y-intercept for $f(x)$: _____
 - Write the equation for $f(x)$: _____
 - From the graph, what is the x-intercept for $f(x)$: _____
 - What is the slope for $g(x)$: _____
 - What is the y-intercept for $g(x)$: _____
 - Write the equation for $g(x)$: _____
 - What's the x-intercept for $g(x)$ (look at the graph): _____
 - Where does $f(x) = g(x)$? _____
 - What is $f(-4) + g(-4)$? _____
 - Plot and graph $f(x) + g(x)$ on the grid and label.
 - Write the equation for $f(x) + g(x)$: _____
 - What kind of graph is made by $f(x) + g(x)$? _____
 - Plot and graph the points for $f(x)g(x)$ in another color.
 - Write the expression for $f(x)g(x)$ as factors. _____
 - Multiply $f(x)g(x)$ by any method:

X	$f(x)$	$g(x)$	$f(x) + g(x)$	$f(x)g(x)$
-5				
-4				
-2				
-1				
0				
2				

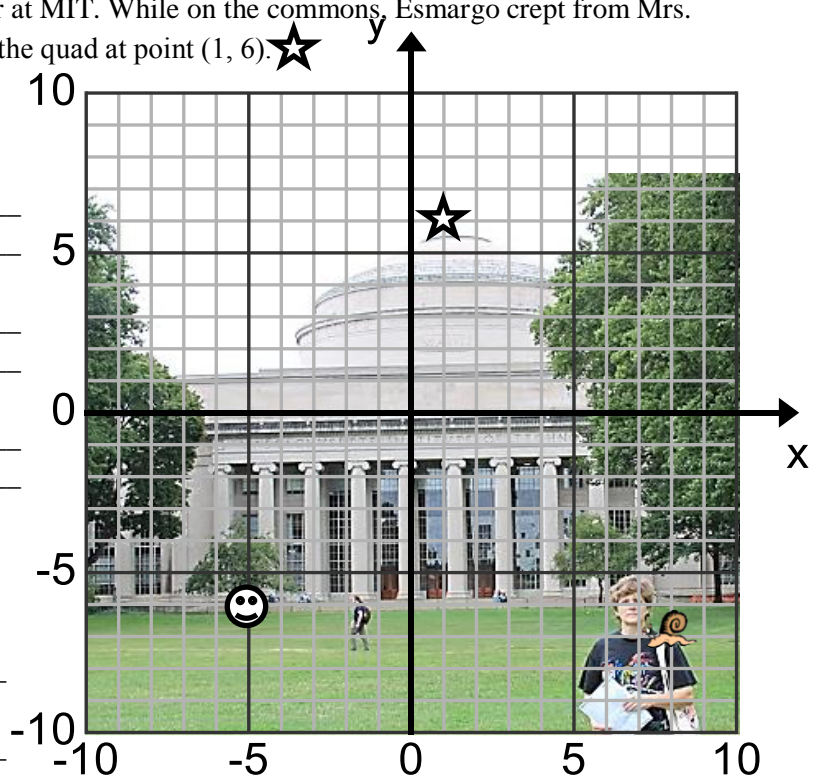


Write the equation: _____

- What kind of graph is made by $f(x)g(x)$? _____

- Mrs. Burton took her pet snail to Boston to enroll her at MIT. While on the commons, Esmargo crept from Mrs. Burton's shoulder (8, -7) to the top of the dome in the quad at point (1, 6).

- Describe (using words) the path Esmargo took if she crept only horizontally and vertically from Mrs. Burton's shoulder to the top of the dome. _____
- Use numbers to describe what happens to the x-value? _____
- List the horizontal shift _____
- Use number to describe what happens to the y value? _____
- List the vertical shift _____
- From the top of the dome, Esmargo decided to rest in the shade under the little tree in front of the library at the left (at (-5, -6)). Describe her path (along the slope triangle). _____
- List the horizontal and vertical shifts that Esmargo travels. _____



3. Given the equation $f(x) = 4x + 12$ and the parent graph $p(x) = x$:
- What is **vertical stretch (slope)** of $f(x)$? _____ Where do you see this in the equation? _____
 - What is **vertical shift** of $f(x)$? _____ Where do you see this in the equation? _____
 - Write the equation to make all the points on the line $f(x)$ move up 8 units? _____
 - How would the **vertical stretch** change in your new equation?

EC: Change your equation of $f(x)$ to expose the x-intercept by factoring out the slope? _____

EC: What is the horizontal shift of $f(x)$? _____ Where do you see this in the equation? _____

4. Compare the two equations $f(x) = 5x + 15$ and $d(x) = 3x + 6$
- Which equation has the greatest vertical **stretch**? _____ How do you know? _____
 - Which equation has the greatest vertical **shift**? _____ How do you know? _____

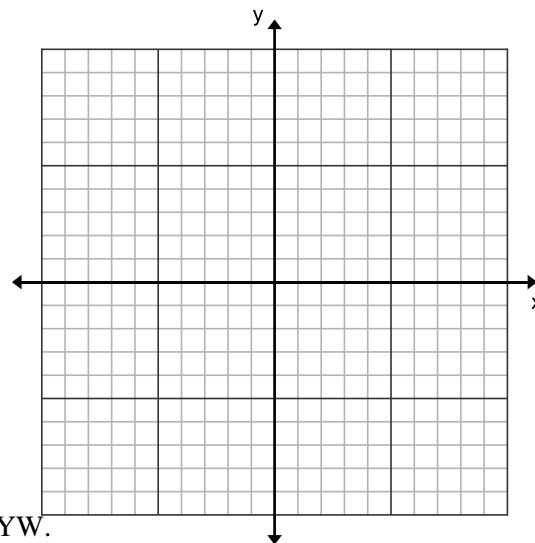
EC: Factor the vertical stretch from $f(x)$: _____ and $d(x)$: _____

EC: Which equation has the greatest horizontal shifts **left**? _____ How do you know? _____

5. Give $f(x) = x + 2$ and $g(x) = -2x + 3$
- Find: $f(x) + g(x)$
 - Find: $f(x) - g(x)$
 - Find: $g(x) - f(x)$
 - Find: $g(x)f(x)$
 - Find: $f(x)g(x)$

6. Given $f(x) = -x + 2$ and $g(x) = 2x - 6$ with the parent graph $p(x) = x$:
- What is the **vertical stretch** of $f(x)$ _____ **Vertical shift**? _____ **EC:** Horizontal shift? _____
 - What is the **vertical stretch** of $g(x)$ _____ **Vertical shift**? _____ **EC:** Horizontal shift? _____
 - Complete the table for $f(x)$, $g(x)$, $f(x) + g(x)$ and $f(x)g(x)$

X	$f(x)$	$g(x)$	$f(x) + g(x)$	$f(x)g(x)$
-2				
-1				
0				
1				
2				
3				



- Graph and label the four functions on the grid.
- Complete the equation for $f(x) + g(x) =$ _____
- Complete the equation for $f(x)g(x) =$ _____
- Use **TWO METHODS** to multiply your equation from part f. SYW.

**No credit if
this question
is not done.**

- When you add two functions that are both lines, the resultant function is a _____
- When you multiply two functions that are both lines, the resultant is a _____
- Find $f(-2) =$ _____ Find $g(0) =$ _____ Find $f(-2) + g(0) =$ _____