HONORS ALGEBRA 2 Name _____
Chapter 2 Date _____
Test (Part A) – KEY Period _____

The solutions are in blue for each problem on the test. Calculators were allowed.

For each given situation, write the equation of the line in standard form.

1. Contains (–3, 5) and (4, –1)

Find the slope:

$$m = \frac{-1-5}{4-(-3)} = \frac{-6}{7}$$

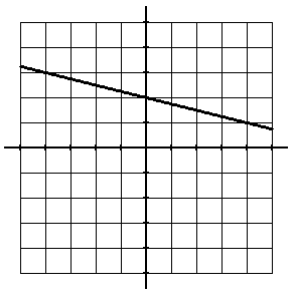
Use the point-slope formula:

$$y = 5 - \frac{6}{7}(x+3)$$

$$y = -\frac{6}{7}x + \frac{17}{7}$$

Write the final answer in standard form: $6x + 7y = 17$

2. Has the graph shown below



The slope is $m = \frac{-1}{3}$ and the y-intercept is $b = 2$. Use the slope-intercept formula:

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

Write the final answer in standard form:
$x + 3y = 6$

3. Contains (0, 2) and is parallel to $3x - 5y = 2$

The slope of the given line is $m = \frac{3}{5}$, so use the same slope.

Use the y-intercept of $b = 2$ in the slope-intercept formula: $y = \frac{3}{5}x + 2$

Write the final answer in standard form: $3x - 5y = -10$

4. Contains (6, 0) and is perpendicular to $y = 7x + 1$

The slope of the given line is $m = 7$, so use the negative reciprocal slope: $m = \frac{-1}{7}$

Use the point-slope formula: $y = \frac{-1}{7}(x - 6) \Rightarrow y = \frac{-1}{7}x + \frac{6}{7}$

Write the final answer in standard form: $x + 7y = 6$

Suppose the function $f(x) = \begin{cases} 3 - x^2, & x < 1 \\ 5x + 1, & x > 1 \end{cases}$. Answer the following.

5. State the domain of $f(x)$.

$(-\infty, 1) \cup (1, \infty)$

6. Evaluate $f(3)$.

Since $3 > 1$, $f(3) = 5(3) + 1 = 16$

7. Evaluate $f(-2)$.

Since $-2 < 1$,
$f(-2) = 3 - (-2)^2 = -1$

8. Evaluate $f(1)$.

Since $x = 1$ is not in the domain,
$f(1)$ is undefined.

Answer each of the following.

9. Use the table at the right to determine if y is a function of x. Explain your reasoning.

x	1	3	5	7
y	6	3	3	6

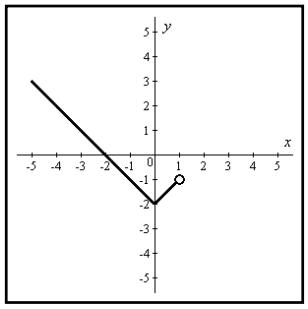
Since there is only one output value for each input value, y is a function of x.

10. Use the table at the right to determine if $s(t)$ is a linear function. Justify your answer.

t	0	2	3	5
$s(t)$	9	3	0	–6

For any two coordinates, $\Delta s/\Delta t = -3$, so $s(t)$ is a linear function.

11. State the domain and range of the function shown at the right.



Domain: $(-\infty, 1)$
Range: $[-2, \infty)$

Suppose $y = f(x)$. Describe the transformation(s) for the following new functions.

12. $y = f(-x)$

Horizontal reflection
over the y-axis

13. $y = f(4x)$

Horizontal shrink
(by a factor of 4)

14. $y = 3f(x)$

Vertical stretch
(by a factor of 3)

15. $y = f(x - 2) - 3$

Horizontal shift right by 2
Vertical shift down by 3

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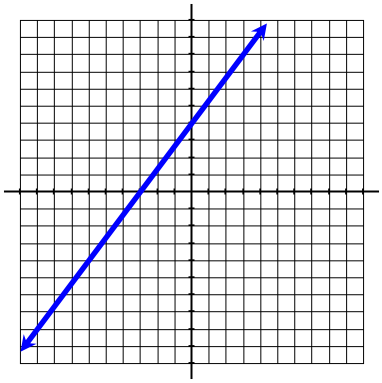
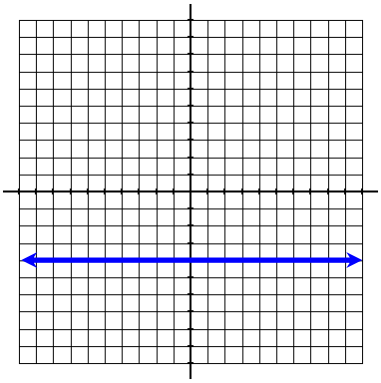
The solutions are in blue for each problem on the test. Calculators were not allowed.

Sketch a graph for each equation in the window provided.

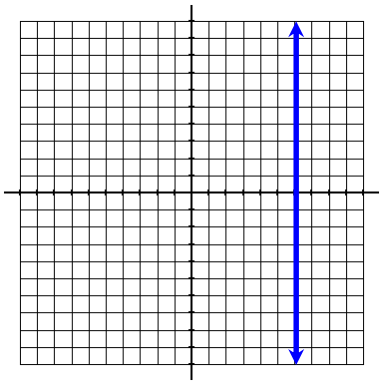
16. $4x - 3y = -12$



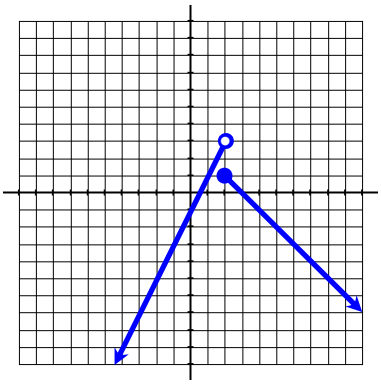
17. $y = -4$



18. $x = 6$

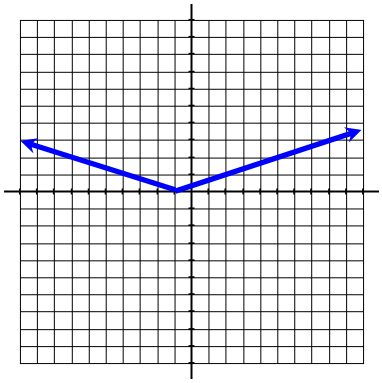


19. $f(x) = \begin{cases} 2x-1, & x < 2 \\ 3-x, & x \geq 2 \end{cases}$

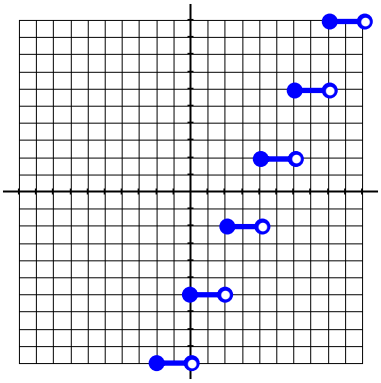


Sketch a graph for each equation/inequality in the window provided.

20. $y = \frac{1}{3}|x+1|$

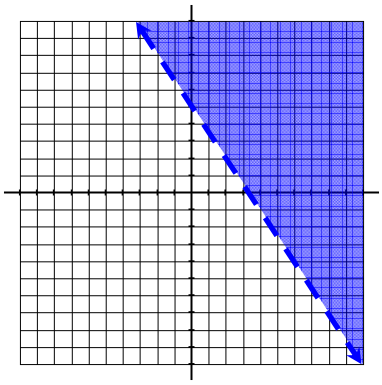


21. $y = 2[x] - 3$

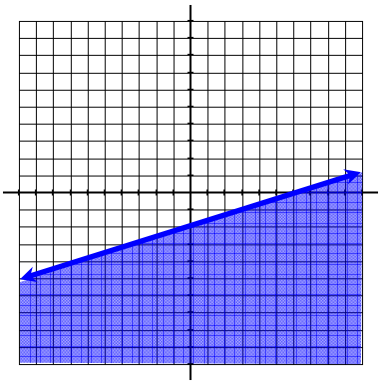


Window: [−5, 5] × [−5, 5]

22. $y > 5 - \frac{3}{2}x$

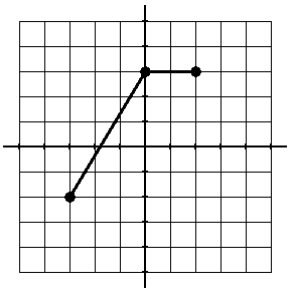


23. $x - 3y \geq 6$

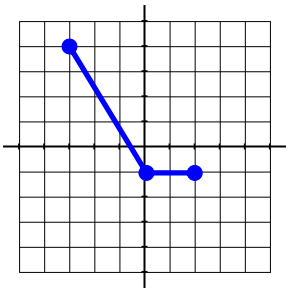


Use the graph of $y = g(x)$ below to sketch the following.

$y = g(x)$



24. $y = -g(x) + 2$



25. $y = \frac{1}{2}g(x)$