BECA / Dr. Huson / 10.3 Geometry Name: .
22 October 2018

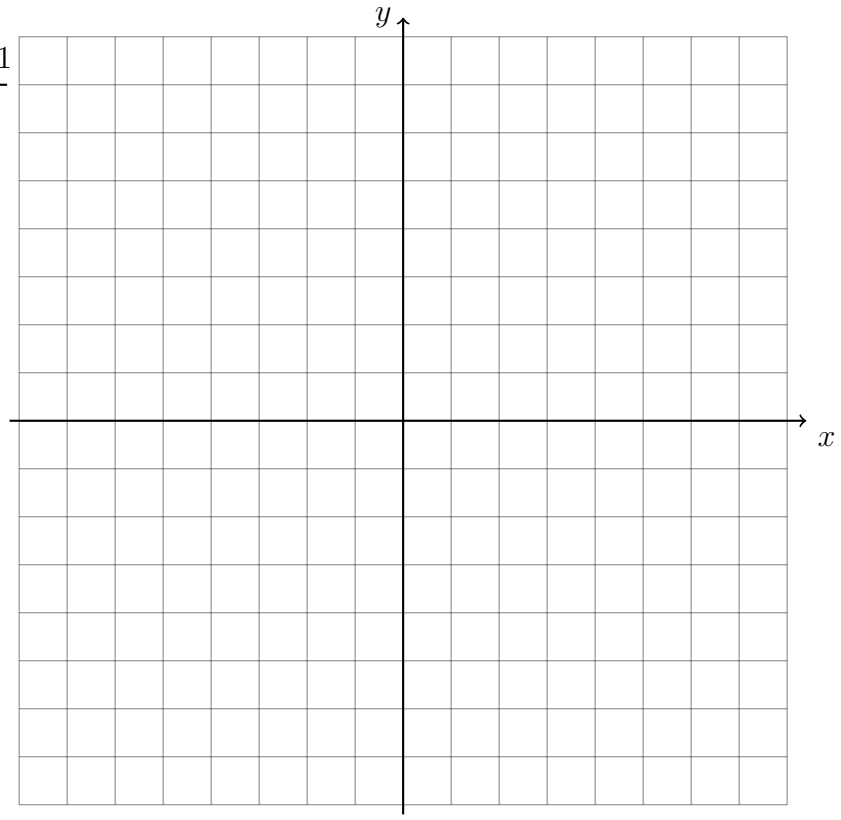
Monday modeling

Show your work. For graphs, use a pencil and straight edge.

Graphing linear functions

1. Fill in the T-chart, plot the points, and draw the line.

x	$y = x + 1$



Write down the slope and y-intercept of the line.

$m =$

$b =$

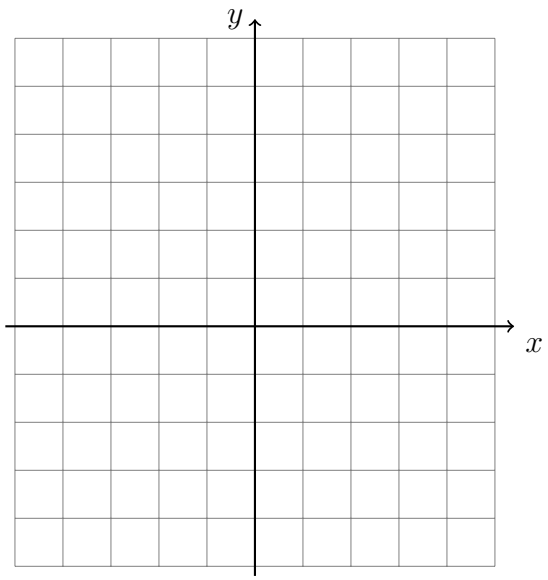
Circle the row for the y-intercept.

BECA / Dr. Huson / 10.3 Geometry Name: .
22 October 2018

2. Find the slope of the function from the line differences.

x	$f(x)$
-1	-3
0	-1
1	1
2	3
3	5

Graph the function as a line over the domain $-1 \leq x \leq 3$.



Simplify each expression ("Collect like terms")

3. $4x^2 + 3x - 7 - 2x^2 - x + 4$

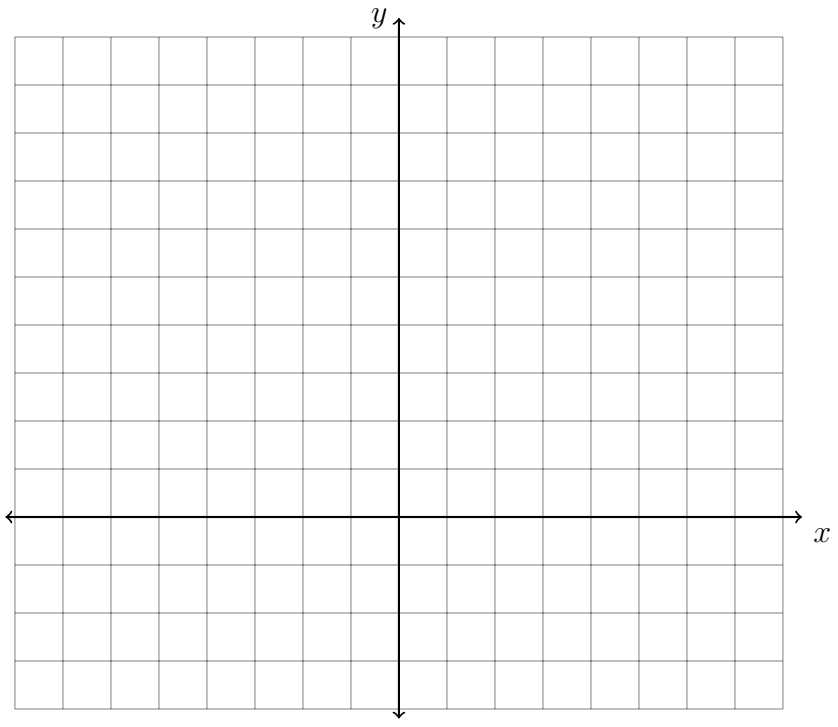
4. $3(a^2 - 2a + 1) - 2(a^2 - a - 4)$

BECA / Dr. Huson / 10.3 Geometry Name: .
22 October 2018

5. Show the line differences next to the table. Are the differences constant, i.e. a line with a slope?

x	$f(x)$
-1	8
0	3
1	0
2	-1
3	0
4	3
5	8

Plot the points and graph the function as a curve over the domain $-1 \leq x \leq 5$.



Mark the lowest point on the curve, the vertex, with a capital "V".

Write down the two values for x that make $f(x) = 0$.

a) $x =$ b) $x =$

BECA / Dr. Huson / 10.3 Geometry Name: .
22 October 2018

Solve for the value of x.

6. $8 = x - 3x$

7. $\frac{1}{2}(x + 7) = 4x$

8. $\frac{1}{3}x + 2x - 10 = 4$

Slope-intercept form

What is the slope and y-intercept of each equation?

9. $y = 4x - 2$

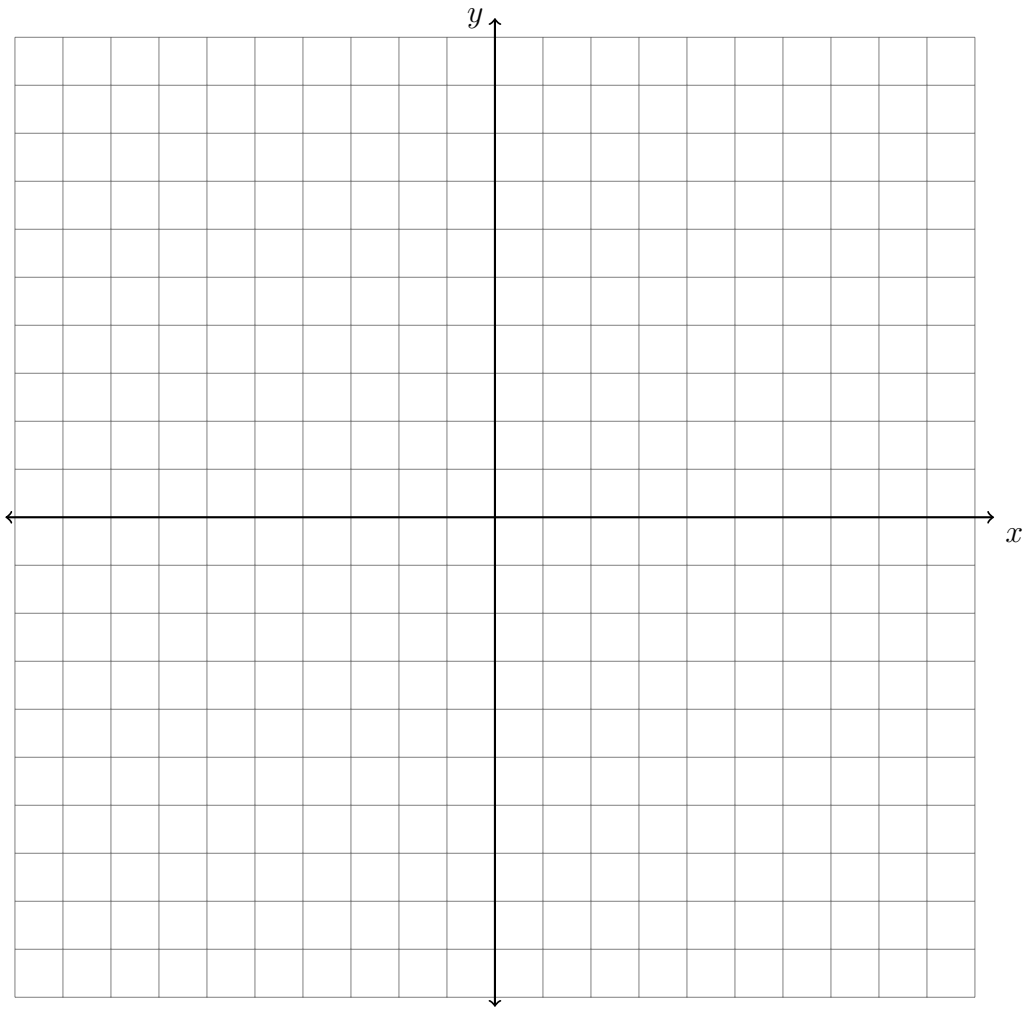
10. $3x + y = 5$

BECA / Dr. Huson / 10.3 Geometry Name: .
22 October 2018

Graphing linear functions

Use pencil for graphs. Mark at least some of the values on each axis. Label each function with its name or equation.

11. Given the function $f(x) = -\frac{1}{2}x + 4$.
    (a) Write down the y-intercept.
    (b) Write down the slope of $f(x)$.
    (c) Draw the function $f(x)$ on the graph below.
    (d) Label the intersection of $f(x)$ with the x-axis as the point P.
    (e) Mark and label the point $Q(-2, 2)$.
    (f) A second line, $g(x)$, is parallel to $f(x)$ and passes through point Q. Plot $g(x)$ on the graph.
    (g) What is the y-intercept of $g(x)$?

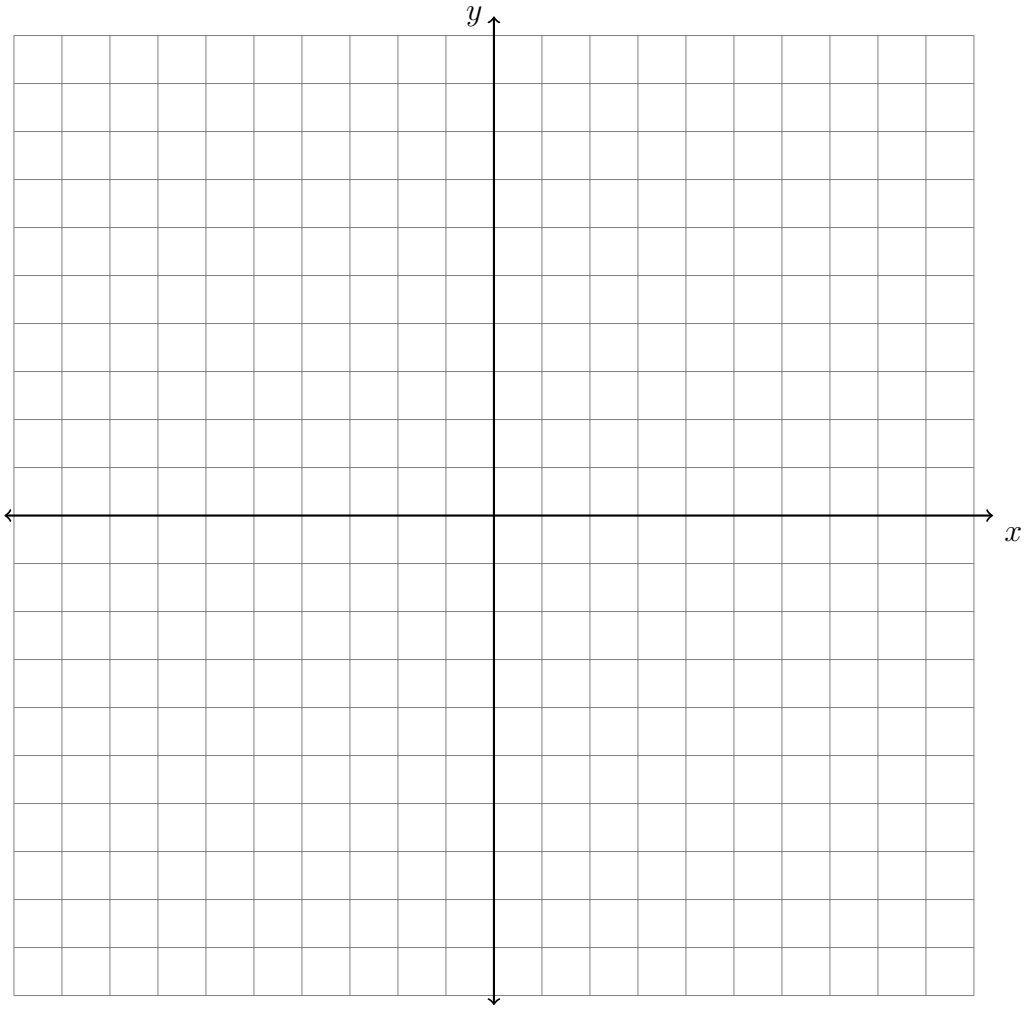


BECA / Dr. Huson / 10.3 Geometry Name: .
22 October 2018

12. (a) Mark and label the point $P(4, 5)$ on the graph below.
    (b) The line L_1 has a y-intercept of 3 and passes through point P. Graph L_1.
    (c) What is the slope of line L_1?

    (d) What is the equation of line L_1?

    (e) A second line, L_2 has the equation $3x + 4y = -8$. Plot L_2 on the graph.
    (f) On the graph, mark the intersection of the two lines, Q, as an ordered pair.

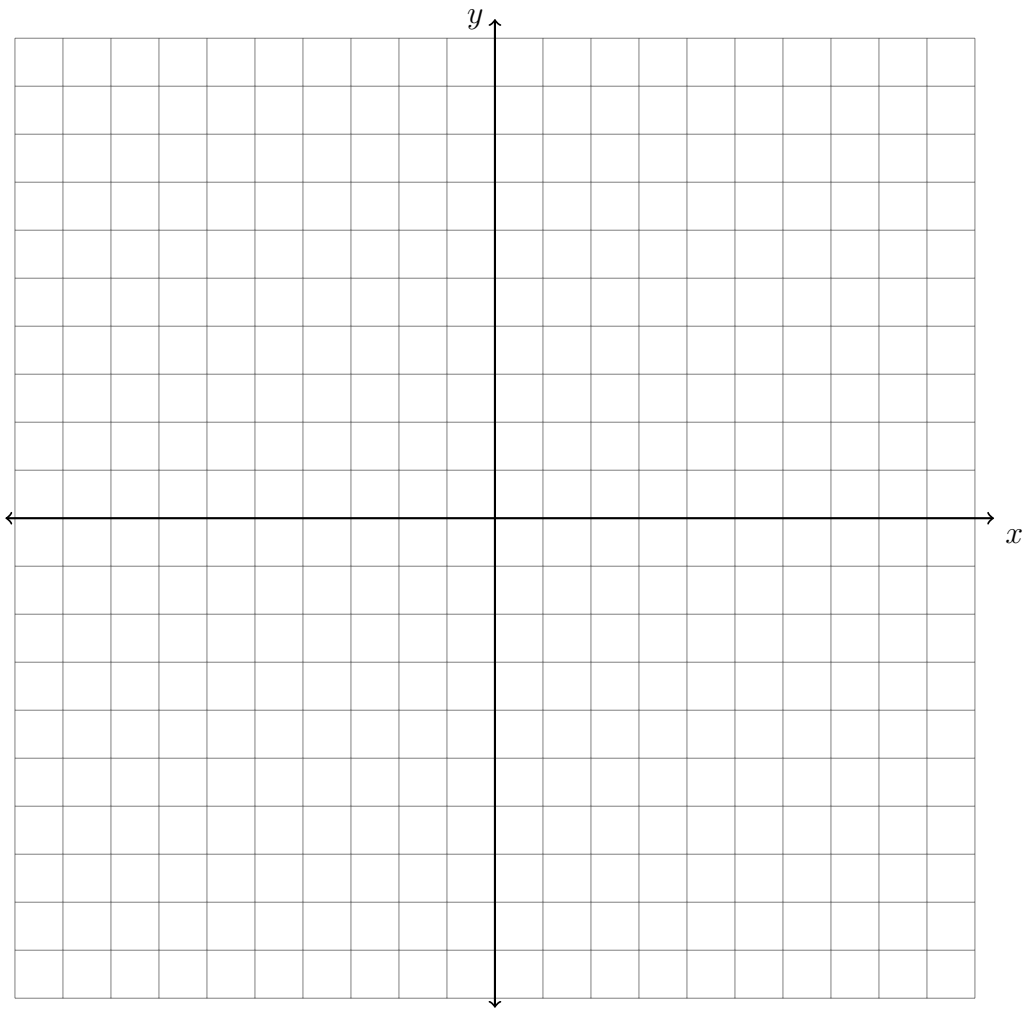


BECA / Dr. Huson / 10.3 Geometry Name: .
22 October 2018

13. Solve the system of equations by graphing each line and marking the intersection as an ordered pair.

$$x + y = 7$$

$$y = 3x + 3$$



BECA / Dr. Huson / 10.3 Geometry Name: .
22 October 2018

Solve each system algebraically.

14. $2x - 4y = 14$
$5x + 4y = 7$

15. $2x - y = -7$
$3x + 4y = 17$

16. Is the expression $2 - \sqrt{5}$ rational, irrational, or neither? Explain.

BECA / Dr. Huson / 10.3 Geometry Name: .
22 October 2018

17. Oceanside Bike Rental Shop charges a 17 dollar bike fee plus 6 dollars an hour for renting a bike. Jeffrey paid 53 dollars total. How many hours did he pay to have the bike checked out?

18. Three friends go bowling. The cost per person per game is \$5.30. The cost to rent shoes is \$2.50 per person. Their total cost is \$55.20. How many games did they play?

19. The admission fee at a small fair is \$1.50 for children and \$4.00 for adults. On a certain day, 40 people enter the fair and \$85.00 is collected. How many children and how many adults attended?

BECA / Dr. Huson / 10.3 Geometry Name: .
22 October 2018

Function substitution

20. Given $f(x) = 4x + 7$. Simplify $f(2)$.

21. Given $f(x) = -\dfrac{(12 + 4x)}{11}$. Simplify $f(-3)$.

BECA / Dr. Huson / 10.3 Geometry Name: .
22 October 2018

Parallel and perpendicular linear equations

22. What is the equation of the line with a slope of 2 passing through the point $(0, 1)$?

23. What is the equation of a line parallel to $y = -2x + 1$ with a y-intercept of 4?

24. What is the slope of a line perpendicular to the line $x - 2y = 16$?