BECA / Dr. Huson / 10.3 Geometry Name: .
26 November 2018

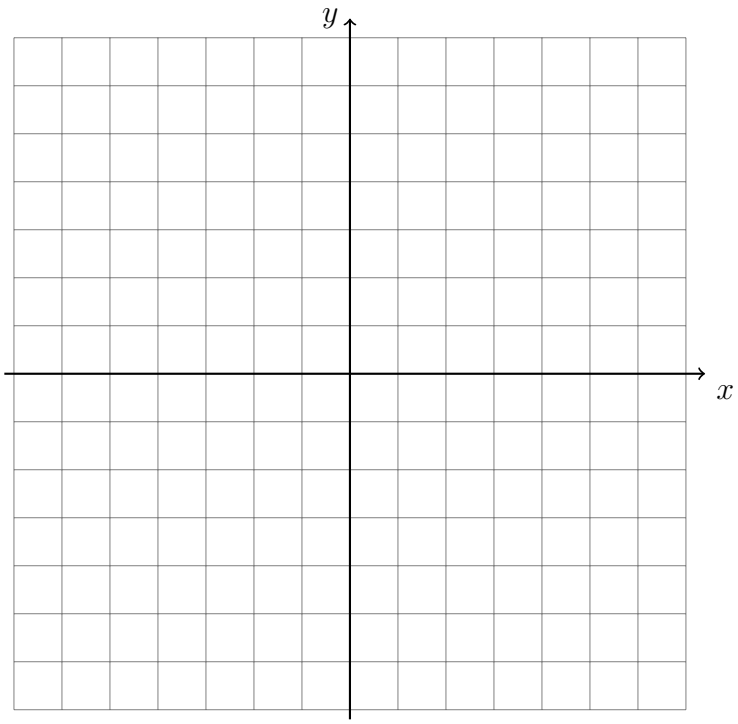
## Monday modeling

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

1. Graph the line $y = \frac{1}{3}x + 1$ after filling in the values in the blanks.

   $y$-intercept = _____

   Slope = _____




In the following two problems, solve for the value of $x$.

2. $7 = 2x - x$

3. $\frac{1}{2}(2 - 4x) = 6$

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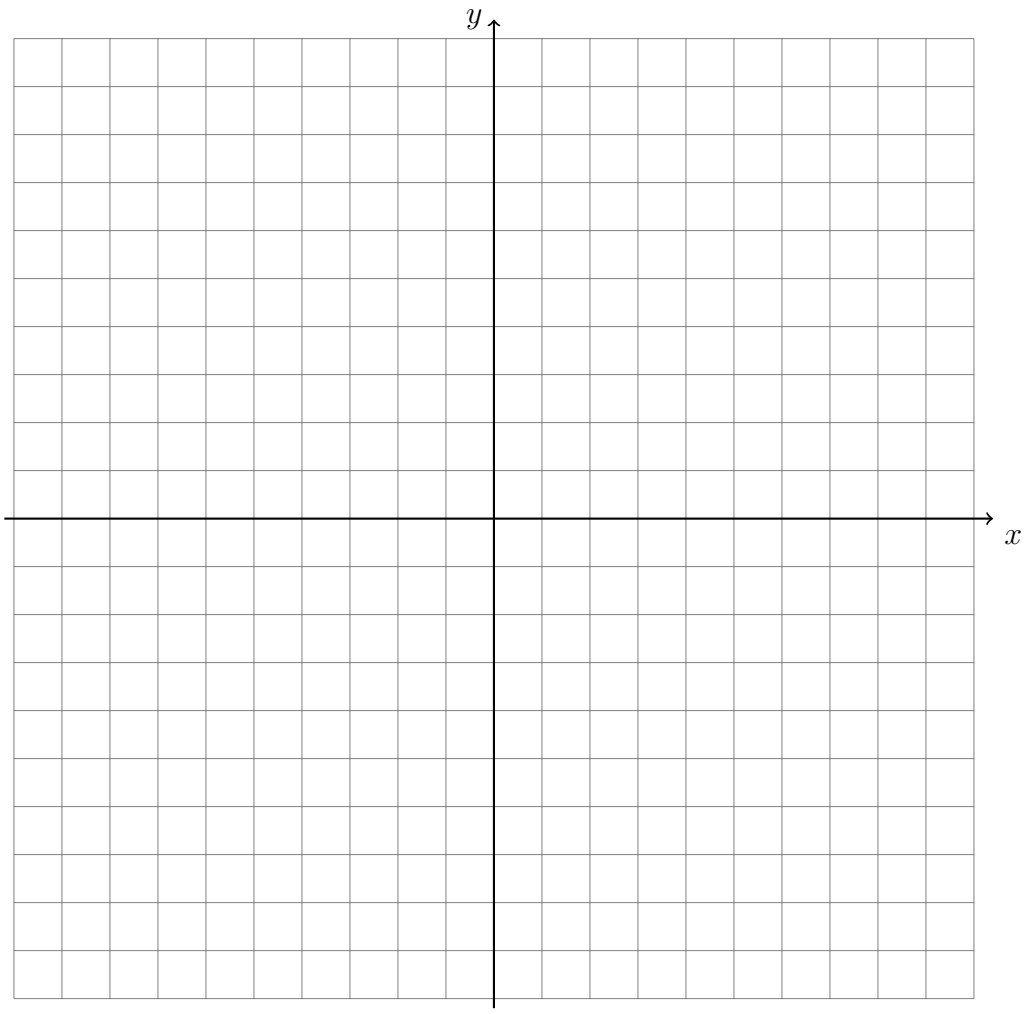
**Graphing quadratic functions**

4. Given the quadratic function $f(x) = x^2 + 1$, find the row differences.

| $x$ | $f(x)$ |
|---|---|
| -3 | 10 |
| -2 | 5 |
| -1 | 2 |
| 0 | 1 |
| 1 | 2 |
| 2 | 5 |
| 3 | 10 |

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



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## Rate of change

5. Find the slope of the function from the ratio of the line differences.

(a)

| $x$ | $f(x)$ |
|---|---|
| -2 | -1 |
| -1 | 1 |
| 0 | 3 |
| 1 | 5 |
| 2 | 7 |

Change in $y =$ _____

Change in $x =$ _____

Slope = _____

(b)

| $x$ | $f(x)$ |
|---|---|
| -4 | 7 |
| -2 | 4 |
| 0 | 1 |
| 2 | -2 |
| 4 | -5 |

Change in $y =$ _____

Change in $x =$ _____

Slope = _____

6. Find the slope of the function. If the rate of change is not constant, write, "Non-linear. The rate of change is not constant."

(a)

| $x$ | $f(x)$ |
|---|---|
| -3 | 0 |
| -1 | 2 |
| 0 | 3 |
| 1 | 4 |
| 3 | 6 |

Slope = _____

(b)

| $x$ | $f(x)$ |
|---|---|
| -4 | -9 |
| -2 | -3 |
| 0 | +1 |
| 2 | -3 |
| 4 | -9 |

Slope = _____

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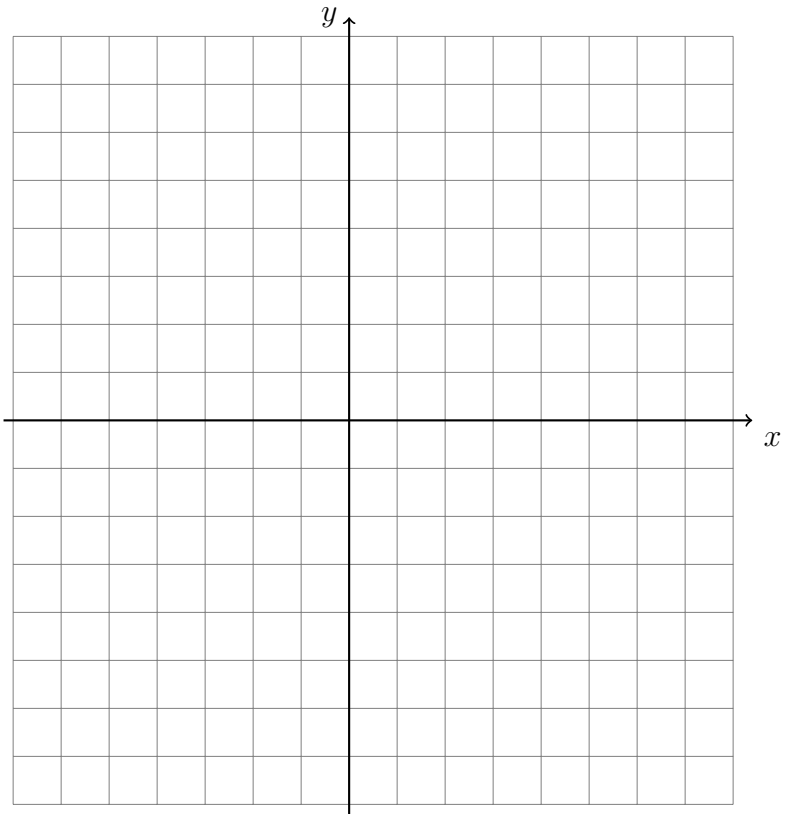
7. Fill in the T-chart, plot the points, and draw the line.

| $x$ | $y = \frac{2}{3}x - 4$ |
|---|---|




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

$m =$

$b =$

Circle the row for the $y$-intercept.

**Simplify each expression ("Collect like terms")**

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

9. $5(a^2 - 3a + 1) - 2(a^2 + 2a - 3)$