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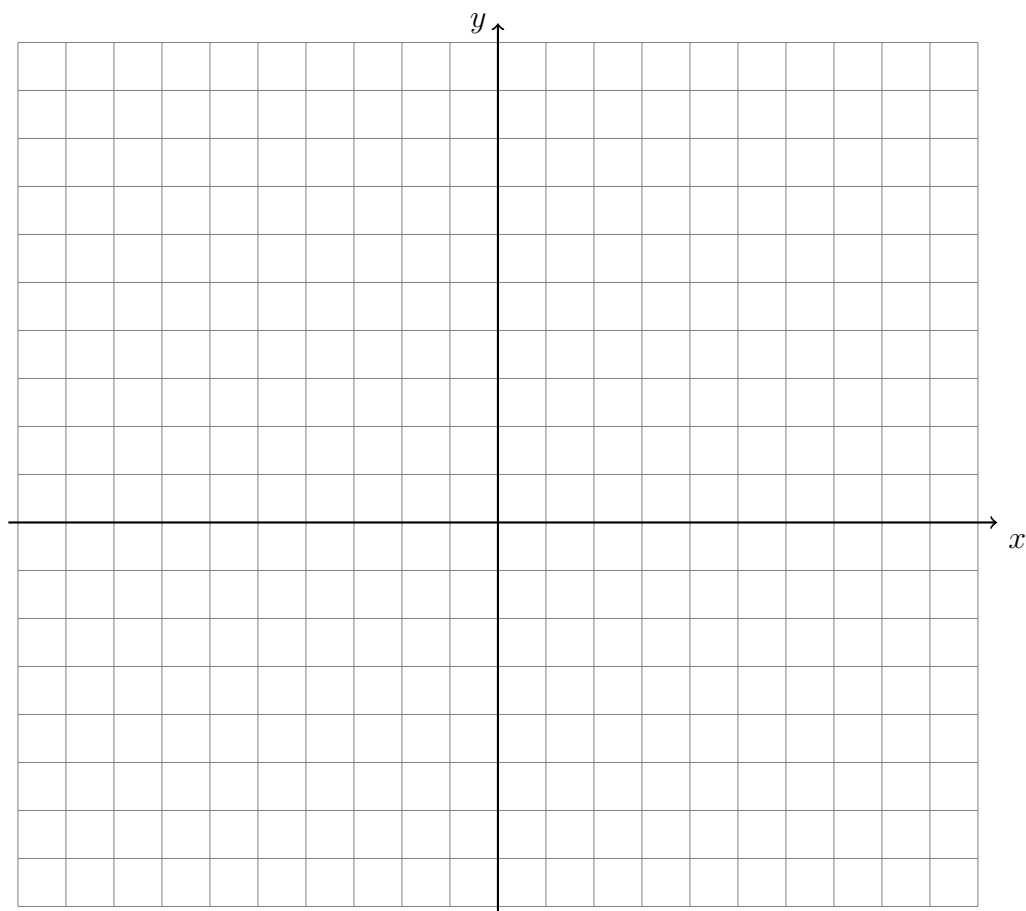
**7-13 Classwork: Linear & quadratic functions on the coordinate plane**

1. Graph and label the two equations. Mark their intersection as an ordered pair.

$$y = -4x - 6$$

$$x - 3y = -21$$

Are the lines parallel, perpendicular, or neither? Justify your answer.



2. The line  $l$  has the equation  $y = 3x + 2$ .

(a) What is the slope of the line  $k$ , given  $k \parallel l$ ?

(b) What is the slope of the line  $m$ , given  $m \perp l$ ?

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

3.  $\frac{1}{2}(3x + 5) = 7$

4.  $\frac{2}{3}(6 - 12x) = -12$

5. Given  $f(x) = \frac{1}{2}x + 1$ . Solve for  $x$  such that for  $f(x) = 2$ .

6. Given  $g(x) = 2x^2 - 7x + 1$ . Simplify  $g(-1)$ .

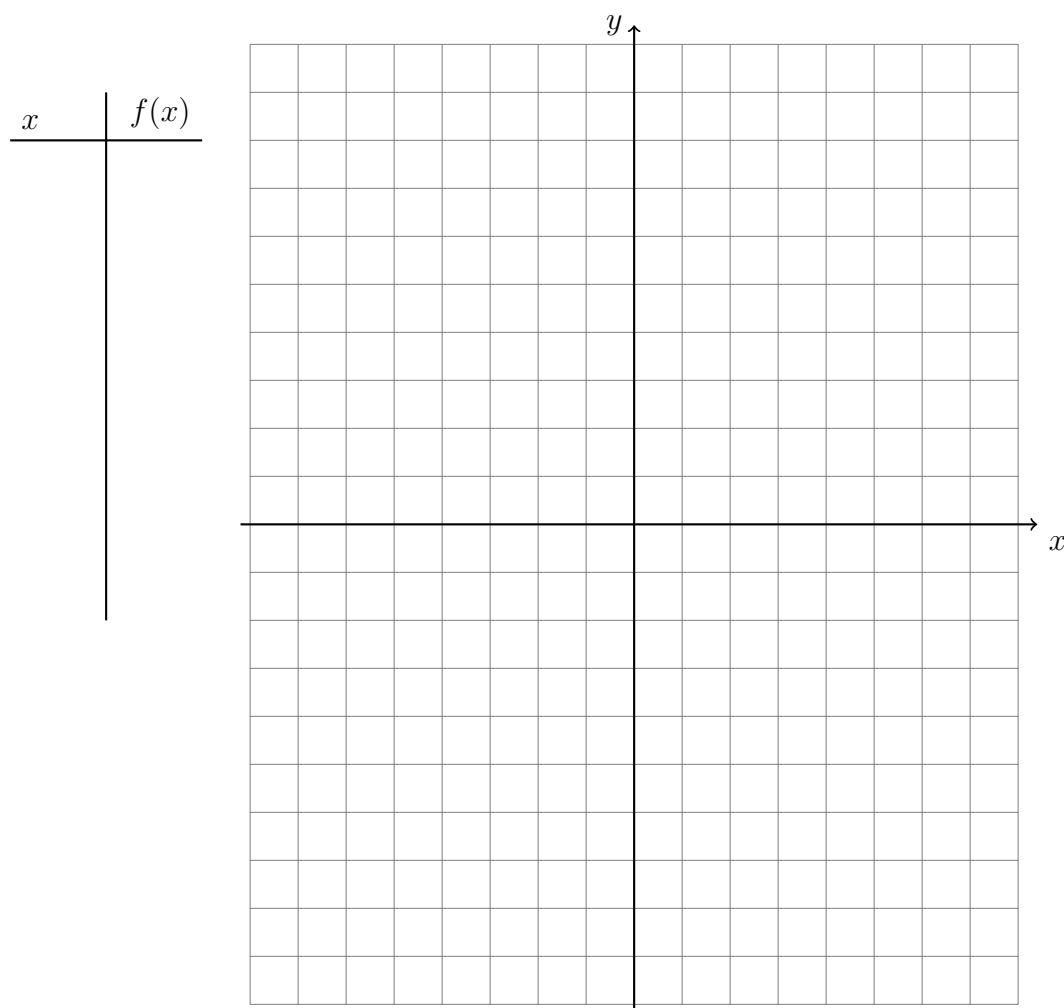
7. Given  $h(x) = x^2 - 8x + 16$ . Solve  $h(x) = 0$ .

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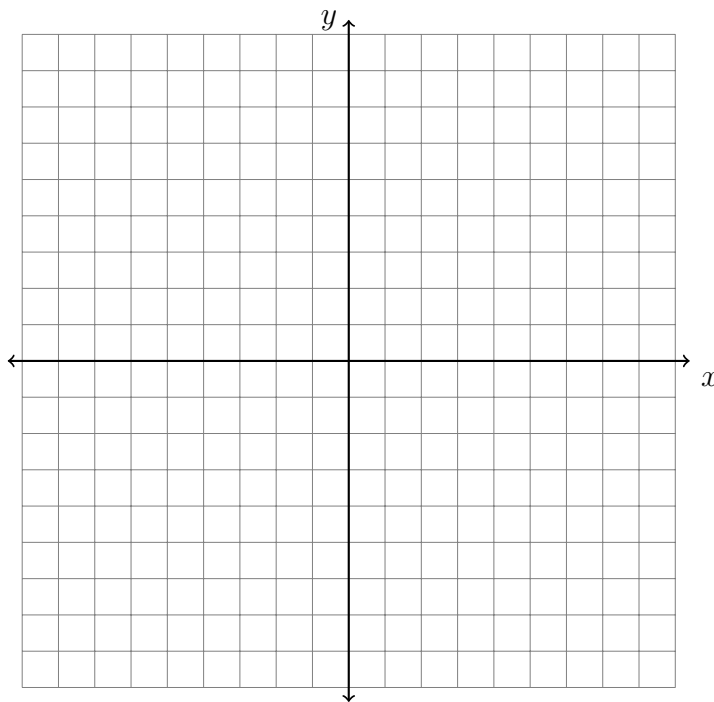
8. Complete the t-chart for  $x = -5, -4, -3, -2, -1, 0$ , then graph and label the function on the grid below. Use pencil for graphs. Draw parabolas as smooth curves.

$$f(x) = (x + 3)^2 - 4$$



- (a) Mark the vertex on the graph as an ordered pair.
- (b) Write down the equation for the axis of symmetry.
- (c) The function is translated four units to the right and three units up,  $f \rightarrow g$ . What is the equation of  $g$ ?

9. Spicy: On the set of axes below, graph the quadrilateral  $ABCD$  having coordinates  $A(-3, -3)$ ,  $B(5, 1)$ ,  $C(6, 8)$ , and  $D(-2, 4)$ .



Show that the midpoints of the two diagonals,  $\overline{AC}$  and  $\overline{BD}$ , are the same point.

Prove  $ABCD$  is a parallelogram. Use the following theorem: A quadrilateral is a parallelogram if and only if its diagonals bisect each other.

Be sure to state the conclusion in your proof.