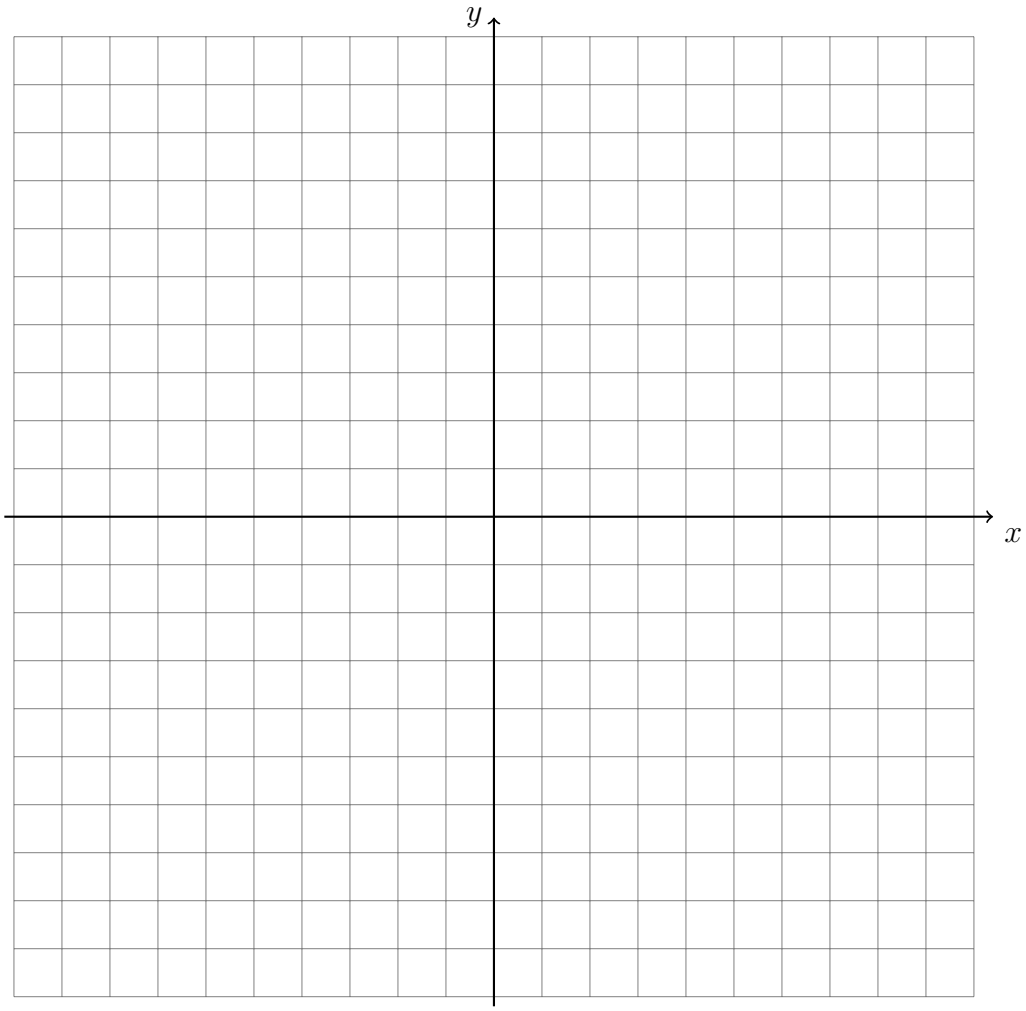
9.9 PreTest: Linear & quadratic functions on the coordinate plane

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

   $y = \frac{2}{3}x - 5$ $3x + 2y = 16$

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



2. Find the decimal value of each expression, rounded to the nearest hundredth.

   (a) $5\sqrt{7}$

   (b) $\dfrac{4^2}{17}$

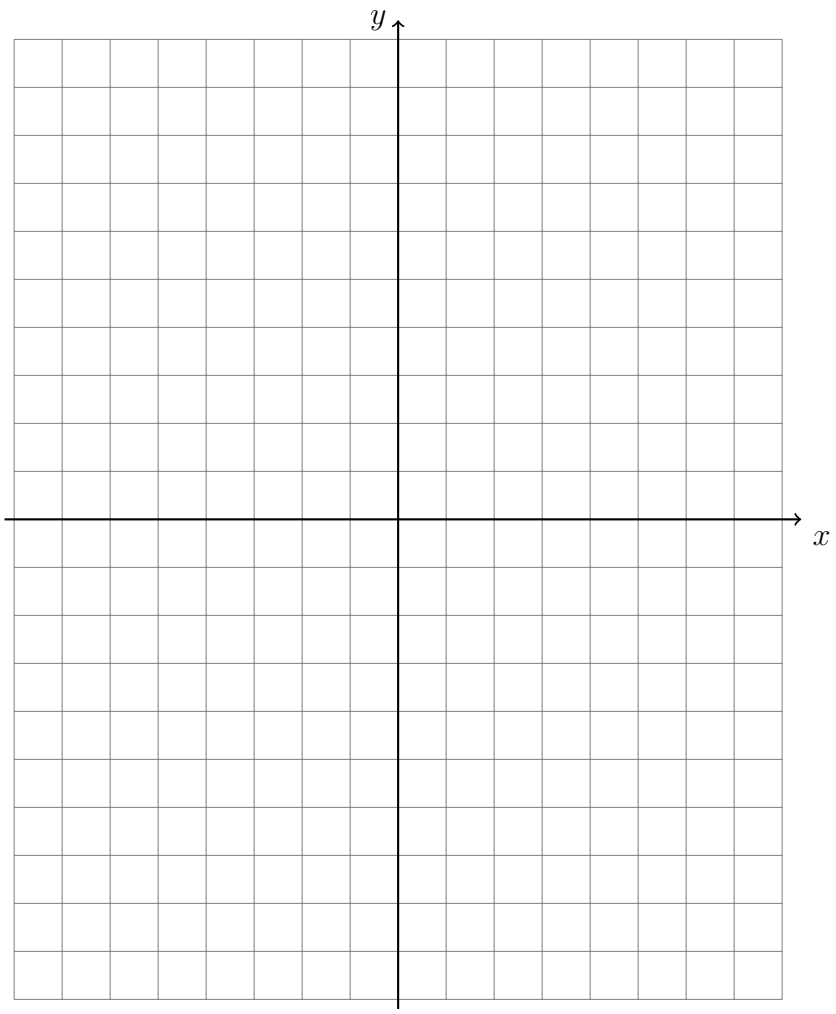
   (c) $4 - \sqrt{7}$

   (d) 7π

3. Complete the t-chart for $x = 2, 3, 4, 5, 6, 7$, then graph and label the function on the grid below. Use pencil for graphs. Draw parabolas as smooth curves.

$$f(x) = (x - 5)^2 - 1$$

x	$f(x)$



(a) Mark the vertex on the graph as an ordered pair.

(b) Write down the equation for the axis of symmetry.

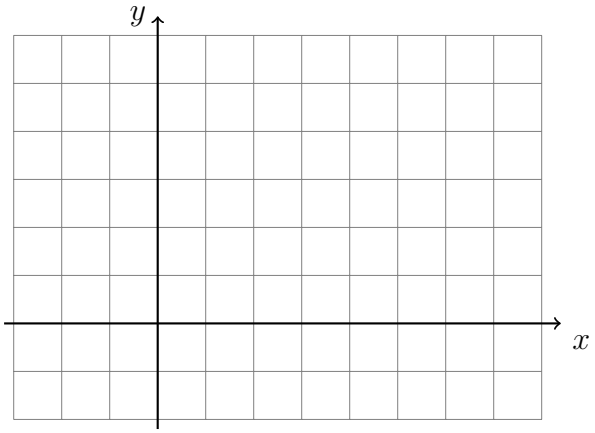
(c) The function is translated two units to the left and three units down, $f \to g$. What is the equation of g?

4. The line l has the equation $y = \frac{1}{4}x - 11$.

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

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

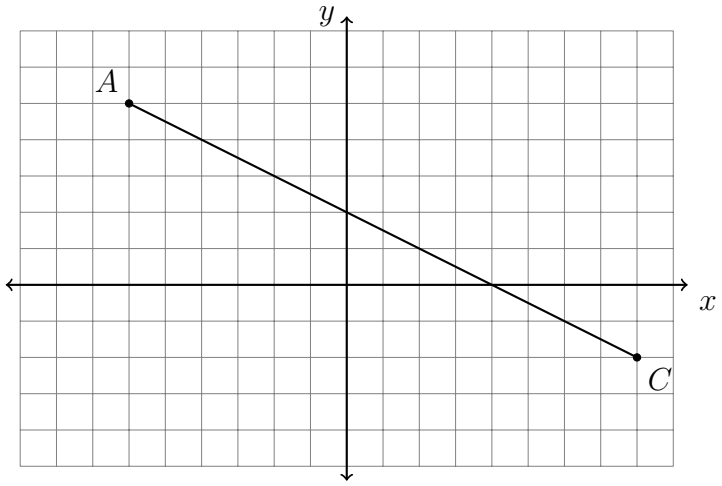
5. On the graph below, draw $\overline{AB}$, with $A(-2, 3)$ and $B(5, 1)$, labeling the end points. Determine and state the coordinates of the midpoint M of $\overline{AB}$ and mark and label it on the graph.



6. Given $M(2, 6)$ and $N(-3, -6)$, find the length of $\overline{MN}$.

7. A translation maps $A(3, 11) \to A'(-2, 3)$. What is the image of $B(0, 7)$ under the same translation?

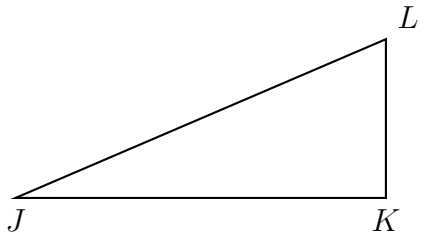
8. In the diagram below, $\overline{AC}$ has endpoints with coordinates $A(-6, 5)$ and $C(8, -2)$.



If B is a point on $\overline{AC}$ and $AB{:}BC = 2{:}5$, what are the coordinates of B?

9. $A(1, -3)$ is one endpoint of $\overline{AB}$. The segment's midpoint is $M(5, 4)$. Find the other endpoint, B.

10. Given right $\triangle JKL$ with $\overline{JK} \perp \overline{KL}$, $JL = 12.4$, $m\angle J = 41°$. Find the length JK, *rounded to the nearest hundredth.*



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

11. $\frac{1}{5}(10x + 5) = 3$

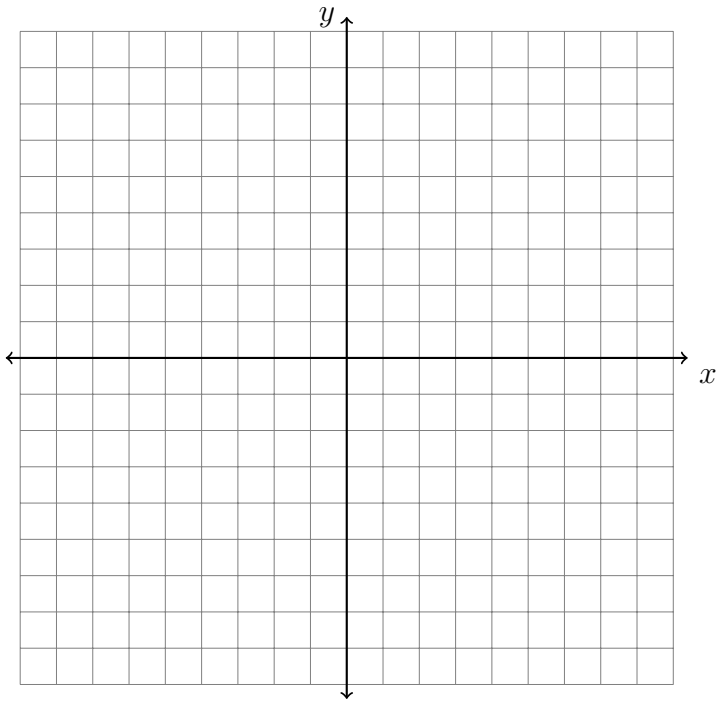
12. $\frac{2}{3}(5 - x) = -4$

13. Given $f(x) = \frac{1}{3}x + 3$. Solve for x such that for $f(x) = 2$.

14. Given $g(x) = -2x^2 - 5x + 3$. Simplify $g(1)$.

15. Given $h(x) = x^2 - 4x - 5$. Solve $h(x) = 0$.

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



Given that $\overline{AD} \parallel \overline{BC}$. Use what you know about slope and the definition that a parallelogram is a quadrilateral with two pairs of parallel sides to prove $ABCD$ is a parallelogram. Be sure to state the conclusion in your proof.