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Do Now: Linear & quadratic functions on the coordinate plane

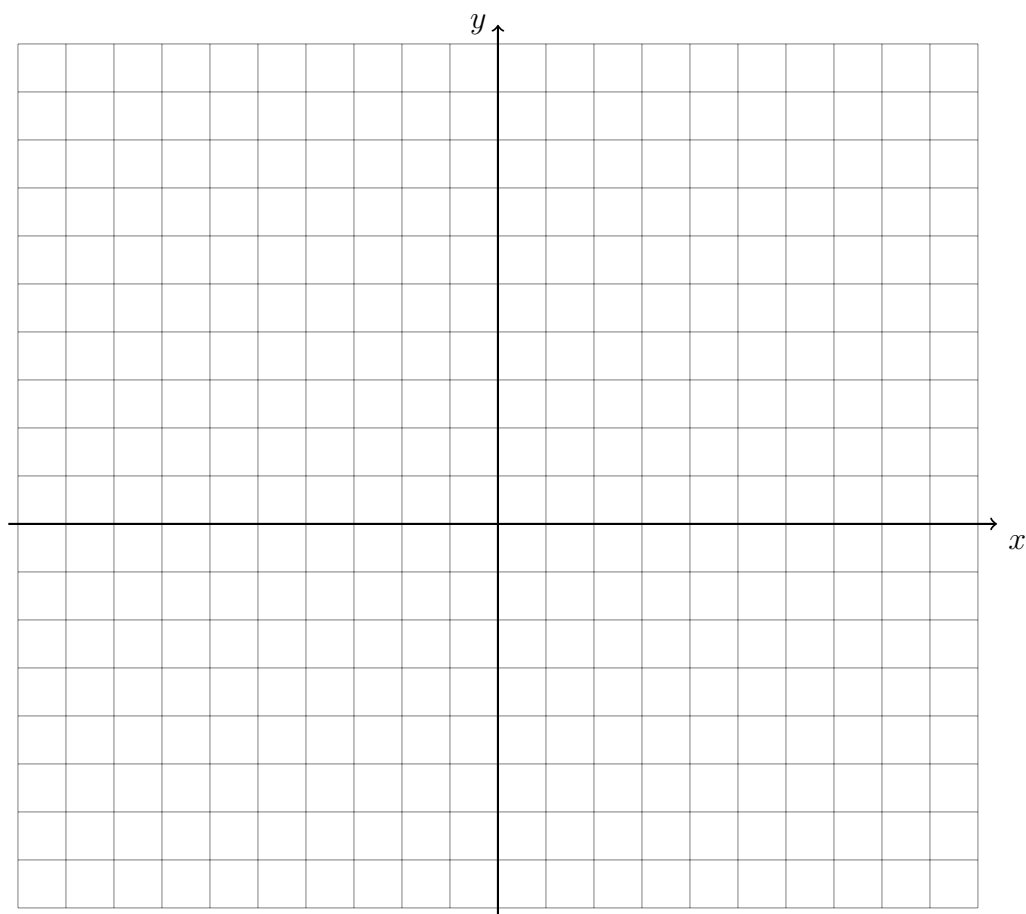
1. Graph and label each function. Mark the intersections as ordered pairs.

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

$$g(x) = (x + 2)^2 - 4$$

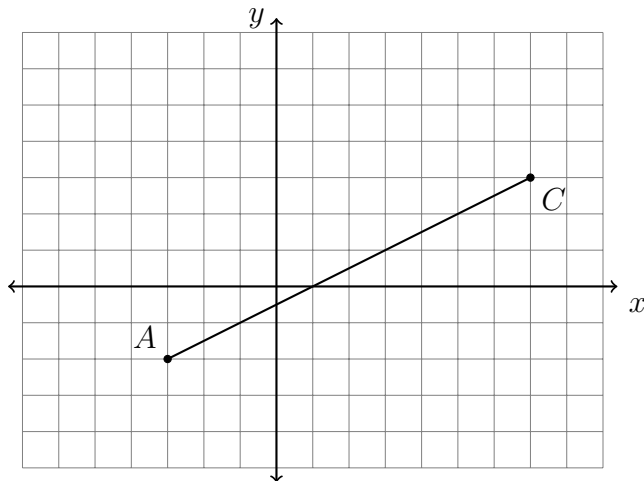
Write down a linear function that does not intersect the parabola.

Find another linear function that intersects g in a single point.



Solve algebraically for $f(x) = g(x)$

2. In the diagram below, \overleftrightarrow{AC} has endpoints with coordinates $A(-3, -2)$ and $C(7, 3)$.



If B is a point on \overline{AC} and $AB:BC = 3:2$, what are the coordinates of B ?

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Pre-Test: Linear & quadratic functions on the coordinate plane

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

(a) $3\sqrt{13}$

(c) $1 - \sqrt{5}$

(b) $\frac{3^2}{7}$

(d) $\frac{\pi}{4}$

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

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

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

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

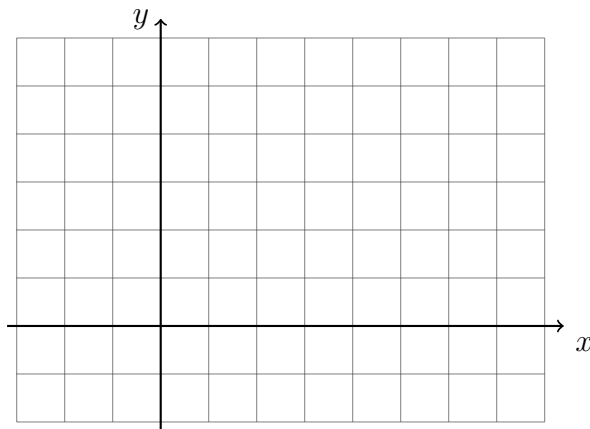
5. Given $g(x) = -2x^2 - 5x + 3$. Simplify $g(1)$.

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

7. The line l has the equation $y = -\frac{3}{5}x - 1$.

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

8. 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.



9. Express the result to *the nearest hundredth*.

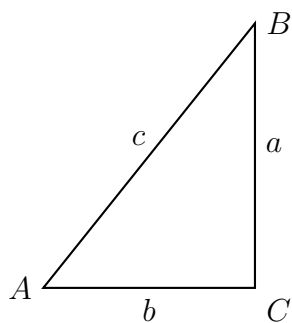
(a) $\sin 32^\circ =$

(c) $\cos 58^\circ =$

(b) $\cos 29^\circ =$

(d) $\sin 61^\circ =$

10. $\triangle ABC$ is shown with $m\angle C = 90^\circ$. The lengths of the triangle's sides are a , b , and c . Express each trigonometric ratio as a fraction of two variables.



(a) $\sin B =$

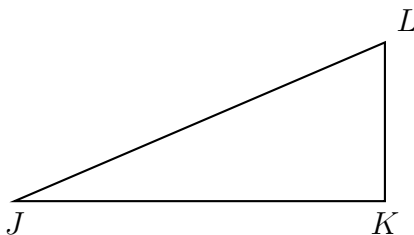
(b) $\cos B =$

(c) $\tan B =$

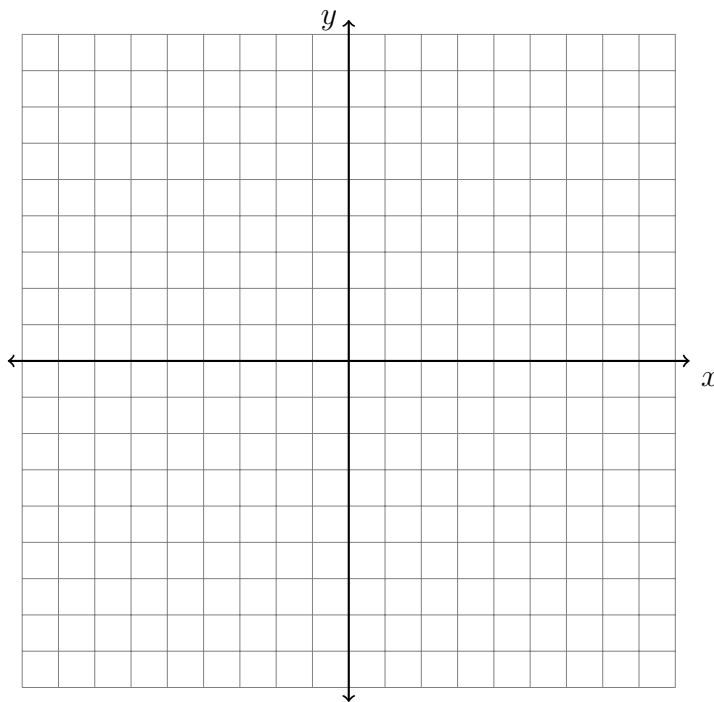
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11. $A(1, -3)$ is one endpoint of \overline{AB} . The segment's midpoint is $M(5, 4)$. Find the other endpoint, B .
12. Given $P(-2, 7)$ and $Q(3, -5)$, find the length of \overline{PQ} .
13. A translation maps $A(-1, 14) \rightarrow A'(-11, 4)$. What is the image of $B(1, -3)$ under the same translation?
14. Given right $\triangle JKL$ with $\overline{JK} \perp \overline{KL}$, $JL = 12.4$, $m\angle J = 41^\circ$. Find the length JK , rounded to the nearest hundredth.



15. 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 $\overline{AD} \perp \overline{BC}$. 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.