

Scrap paper is available but write your final solution clearly in the space provided

1. **Application** The vertex of a parabola is $(2, -5)$. One x -intercept is -3 . What is the other x -intercept?

2. Find the axis of symmetry of the parabola. $y = x^2 + x - 6$

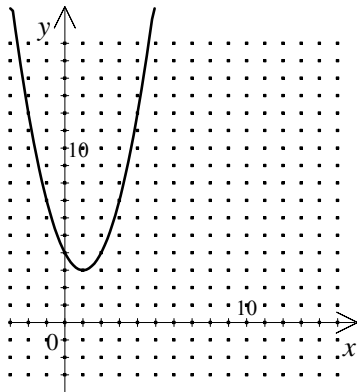
[A] $x = -1$

[B] $x = \frac{1}{2}$

[C] $x = 1$

[D] $x = -\frac{1}{2}$

3. **Communication** Write the equation that represents the graph. Explain your reasoning.



4. **Communication** None of the following trinomials is a perfect square. Change one term in each trinomial to make a perfect square. Explain your reasoning.

a) $a^2 + 17ab + 36b^2$ b) $t^2 - 8t + 15$ c) $9x^2 + 7xy + y^2$ d) $c^2 + cd + d^2$

5. Find the shortest distance from the origin to each line, to the nearest tenth.

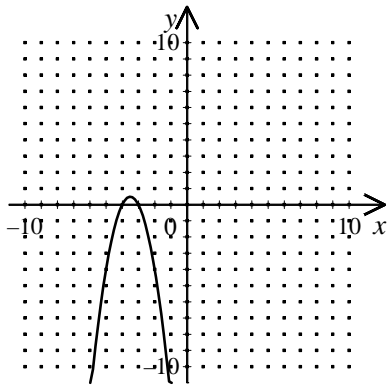
a) $x + y = -2$ b) $3x - 2y = 6$ c) $4x = -5y + 20$ d) $y + 3x - 6 = 0$

6. **Application** For the equation $y = 2x^2 + 14x + 24$,
- find the axis of symmetry of the graph of the equation
 - find the vertex of the graph
 - graph the equation

[A] a) $x = -\frac{7}{2}$

b) vertex $\left(-\frac{7}{2}, \frac{1}{2}\right)$

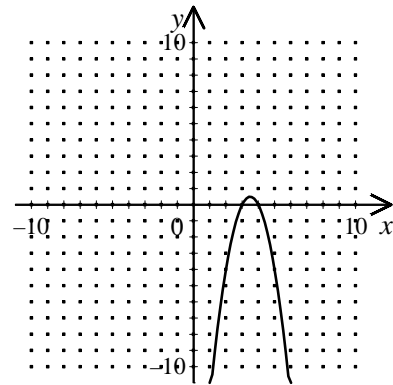
c)



[B] a) $x = \frac{7}{2}$

b) vertex $\left(\frac{7}{2}, \frac{5}{8}\right)$

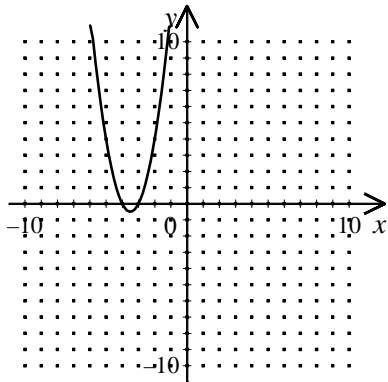
c)



[C] a) $x = -\frac{7}{2}$

b) vertex $\left(-\frac{7}{2}, -\frac{1}{2}\right)$

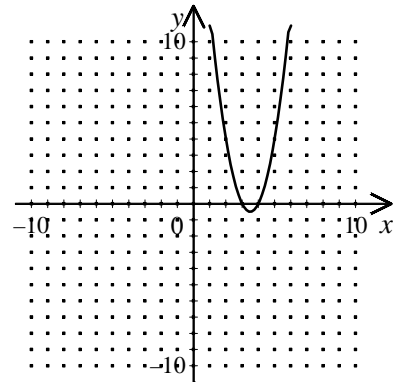
c)



[D] a) $x = \frac{7}{2}$

b) vertex $\left(\frac{7}{2}, -\frac{3}{8}\right)$

c)



7. Triangle XYZ has vertices X(2, 1), Y(1, -3), and Z(6, -2). Find the midpoints, A and B, of XY and XZ, respectively, and show that AB is parallel to YZ.

8. **Problem Solving** Find two numbers whose sum is 44 and whose product is a maximum.