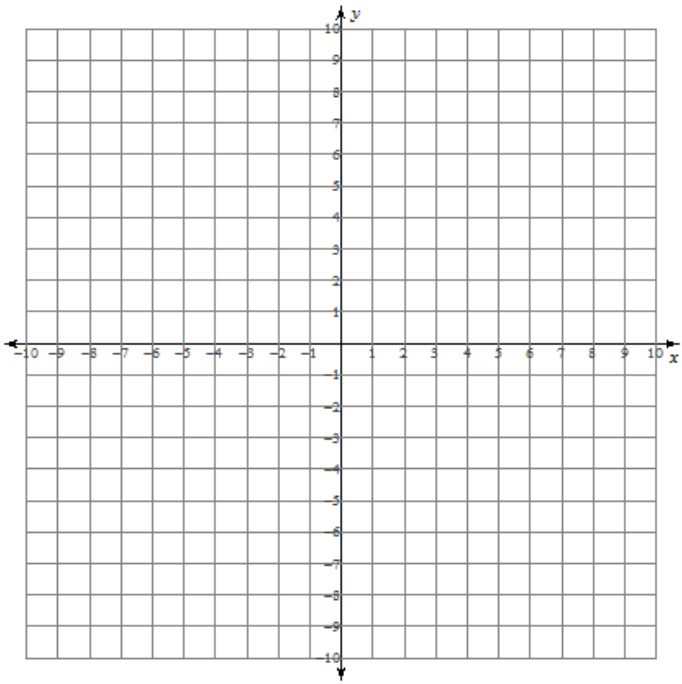


# Worksheet – Quadratic Functions

1. Complete the following table of values for the function  $y = x^2 - 4x - 5$  and sketch the graph. State the intercepts, axis of symmetry, vertex, domain, and range of the function.

x	-2	-1	0	1	2	3	4	5
y								



y-intercept	
x-intercept(s)	
Vertex	
Equation of the axis of symmetry	
Domain	
Range	

2. Factor the following quadratic expressions.

a.  $x^2 - 100$

b.  $x^2 - 5x - 6$

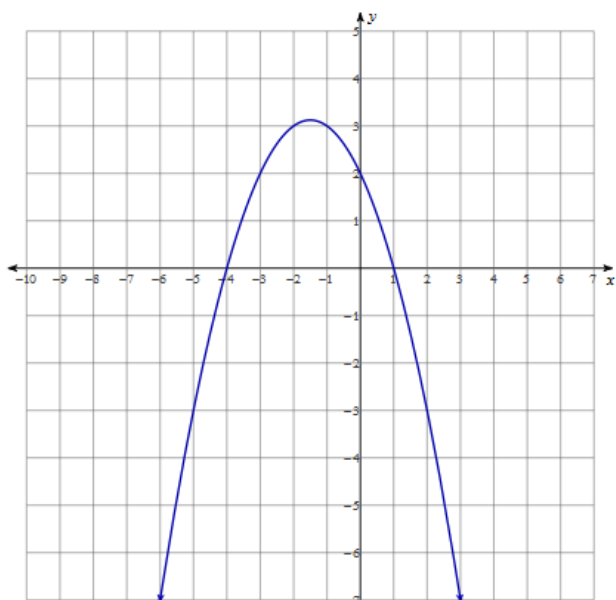
c.  $x^2 - 5x + 6$

d.  $4x^2 + 11x - 3$

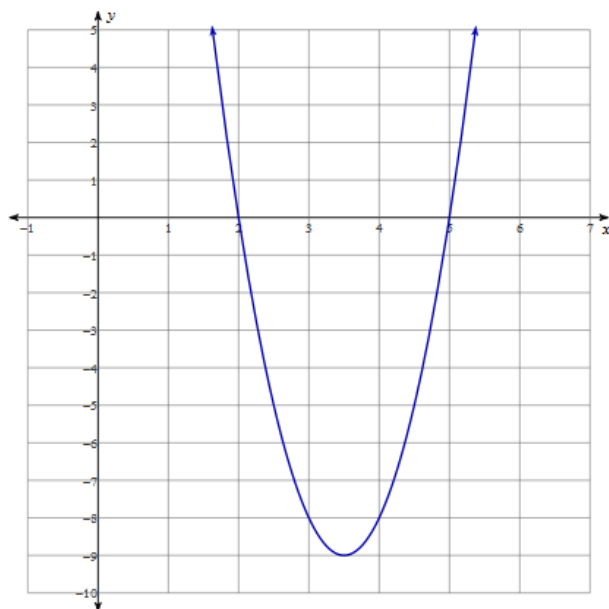
e.  $6x^2 - 19x + 10$

3. Determine the equations of the following parabolas. Write your final equations in standard form.

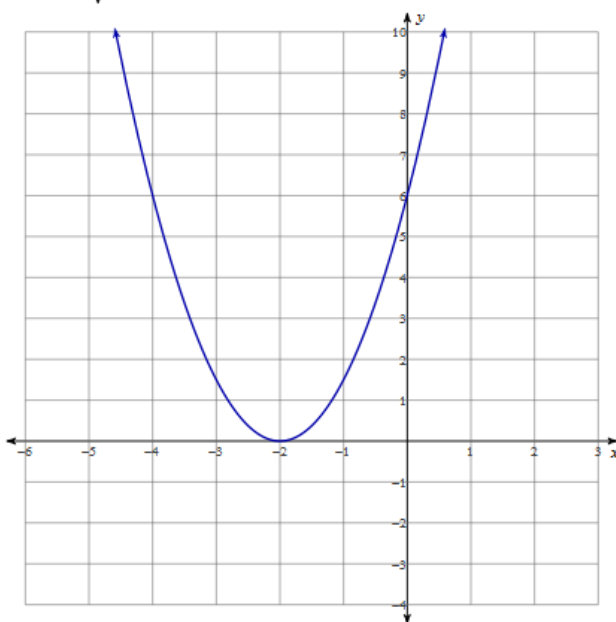
a.



b.



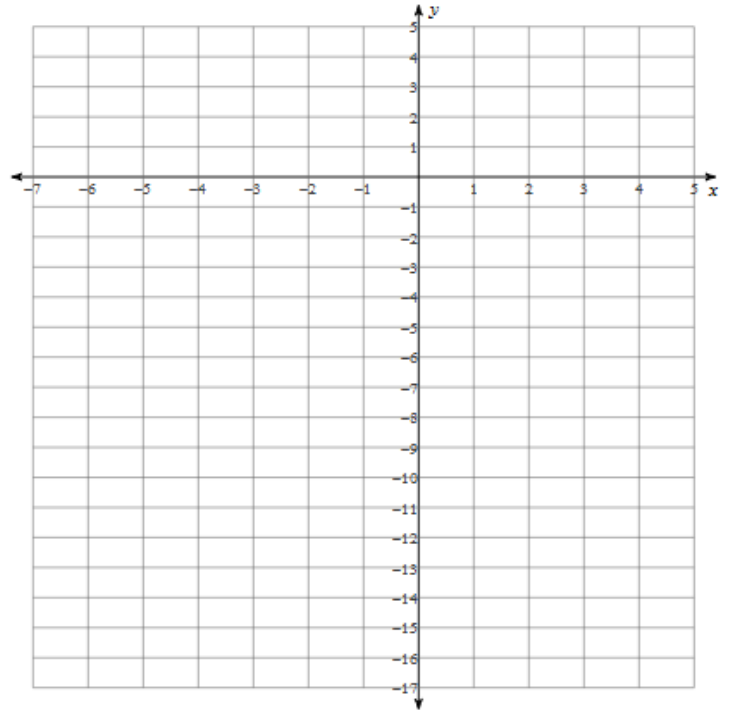
c.



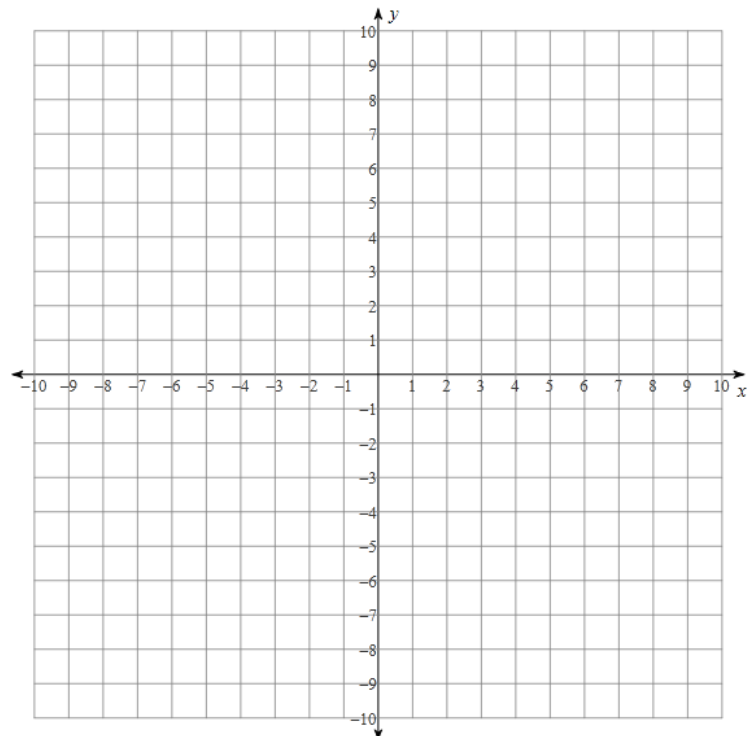
4. For each of the given functions, determine the following characteristics and use them to help you sketch the graph of the function.

- y-intercept and corresponding point equidistant from the axis of symmetry (use partial factoring)
- x-intercepts
- axis of symmetry
- vertex

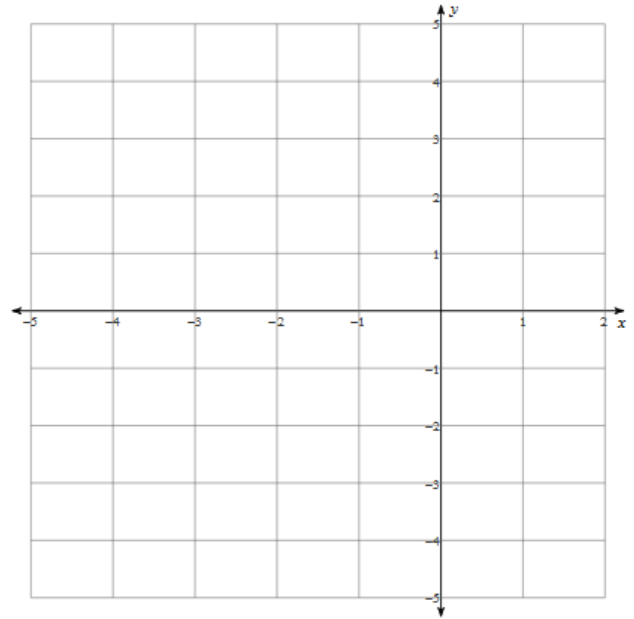
a.  $y = x^2 + 2x - 15$



b.  $y = -x^2 + 8x - 7$



c.  $y = 2x^2 + 7x + 3$



5. Pedalworks rents bicycles to tourists who want to explore the local trails. Data from previous rentals show that the shop will rent 7 more bicycles per day for every \$1.50 decrease in rental price. The shop currently rents 56 bicycles per day at a rental price of \$39 per bike. The revenue,  $R$ , can be determined by the following function, where  $x$  represents the number of \$1.50 price decreases.

$$R = (56 + 7x)(39 - 1.50x)$$

Determine how much the shop should charge per bike in order to maximize its revenue. Solve algebraically. Show all your work. Answer the question with a complete sentence.