In Exercises 27–32, find the vertex and axis of the graph of the function. Rewrite the equation for the function in vertex form.

27. $f(x) = 3x^2 + 5x - 4$

28. $f(x) = -2x^2 + 7x - 3$

In Exercises 33–38, use completing the square to describe the graph of each function. Support your answers graphically.

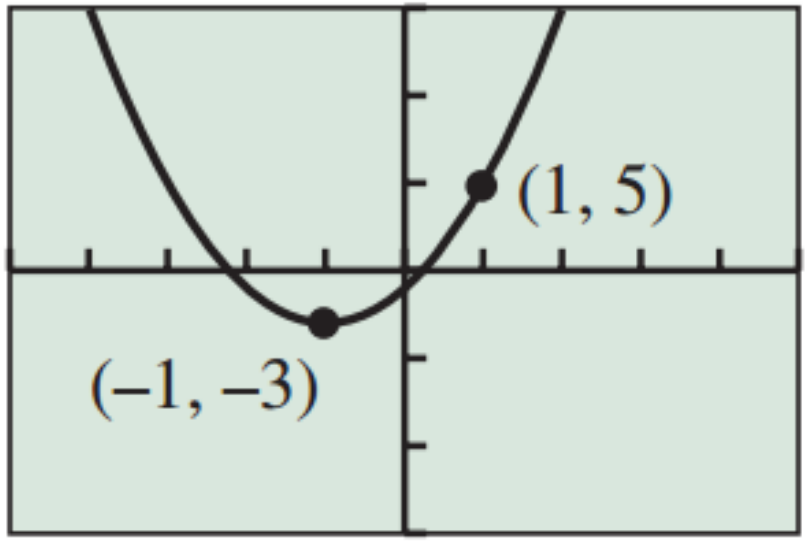
33. $f(x) = x^2 - 4x + 6$

35. $f(x) = 10 - 16x - x^2$

37. $f(x) = 2x^2 + 6x + 7$

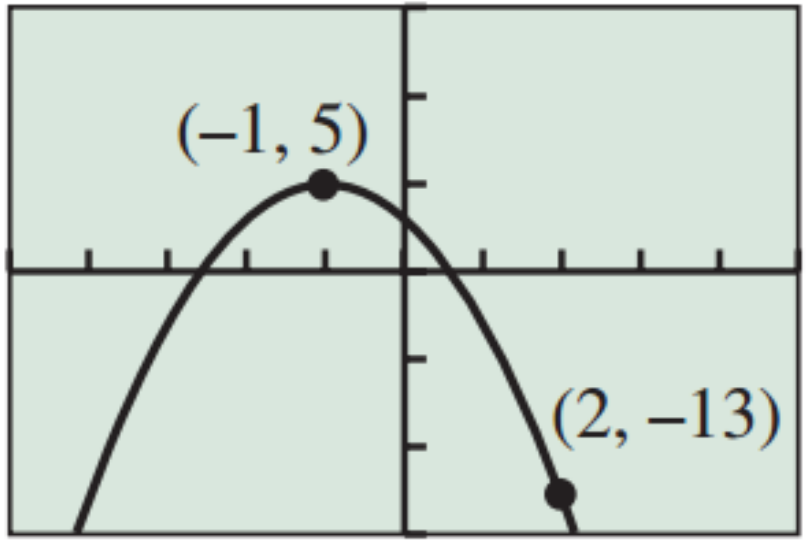
In Exercises 39–42, write an equation for the parabola shown, using the fact that one of the given points is the vertex.

39.



[–5, 5] by [–15, 15]

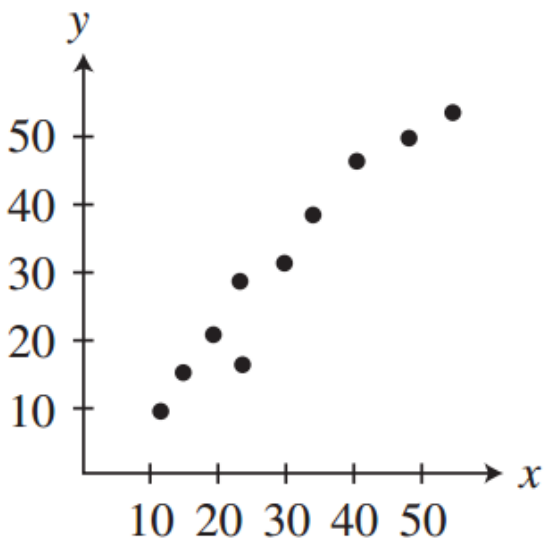
42.



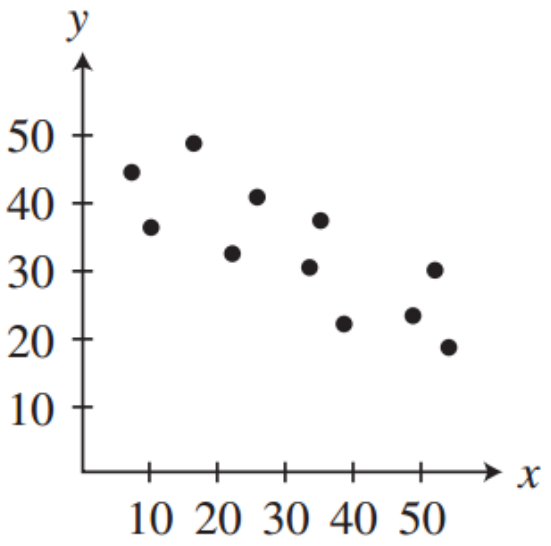
[–5, 5] by [–15, 15]

In Exercises 45–48, describe the strength and direction of the linear correlation.

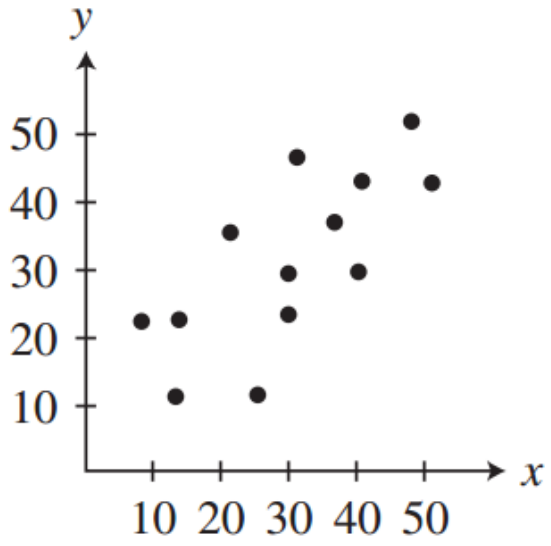
45.



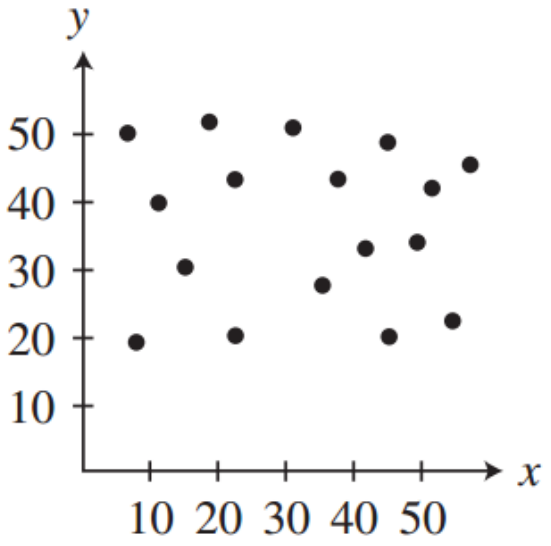
46.



47.



48.



49. Comparing Age and Weight A group of male children were weighed. Their ages and weights are recorded in Table 2.4.

Table 2.4 Children's Age and Weight

Age (months)	Weight (pounds)
18	23
20	25
24	24
26	32
27	33
29	29
34	35
39	39
42	44

(a) Draw a scatter plot of these data.

(b) Writing to Learn Describe the strength and direction of the correlation between age and weight.

61. Free-Fall Motion As a promotion for the Houston Astros downtown ballpark, a competition is held to see who can throw a baseball the highest from the front row of the upper deck of seats, 83 ft above field level. The winner throws the ball with an initial vertical velocity of 92 ft/sec and it lands on the infield grass.

(a) Find the maximum height of the base ball.

(b) How much time is the ball in the air?

(c) Determine its vertical velocity when it hits the ground.