

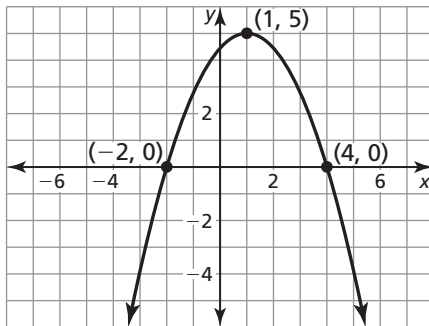
2.4 Practice A

In Exercises 1–3, write an equation of the parabola in vertex form.

- passes through $(6, 4)$ and has vertex $(2, -3)$
- passes through $(-3, -10)$ and has vertex $(3, -8)$
- passes through $(0, -5)$ and has vertex $(-1, 4)$

In Exercises 4–6, write an equation of the parabola in intercept form.

- x -intercepts of 10 and 6; passes through $(11, 8)$
- x -intercepts of 2 and 8; passes through $(0, 3)$
- x -intercepts of -14 and -2 ; passes through $(-16, -8)$
- Use the parabola shown.



- Write an equation of the parabola in vertex form.
 - Expand the equation in part (a) to the form $y = ax^2 + bx + c$.
 - Write an equation of the parabola in intercept form.
 - Expand the equation in part (c) to the form $y = ax^2 + bx + c$.
 - Do both methods give an equation that represents the parabola? Which method did you find easier? Explain.
8. A basketball is thrown up in the air toward the hoop. The table shows the heights y (in feet) of the basketball after x seconds. Find the height of the basketball after 5 seconds. Round your answer to the nearest hundredth.

Time, x	0	9	18
Basketball height, y	6	10	6

2.4 Enrichment and Extension

Modeling with Quadratic Functions

In Exercises 1–5, analyze the differences in the outputs. Determine whether the data are linear or quadratic. Write an equation that fits the data. If quadratic, write the equation in (a) standard form and (b) vertex form, and (c) state the transformation from the parent function x^2 .

1.

Altitude (1000 feet), x	1	1.5	2	2.5	3
Boiling water temperature ($^{\circ}\text{F}$), y	210.3	209.4	208.5	207.6	206.7

2.

Time (seconds), x	1	2	3	4	5
Height (feet), y	73.5	78.4	73.5	58.8	34.3

3.

Units sold, x	1	2	3	4	5
Profit (thousands of dollars), y	39	60	75	84	87

4.

Depth (feet), x	0	10	20	30	40
Pressure (pounds per square inch), y	14.7	19.03	23.36	27.69	32.02

5.

Time (seconds), x	1	1.5	2	2.5	3
Height (feet), y	12	12.75	11	6.75	0