Algebra 2

Notes: 2.4

Name_____

Date_____Block_____

I. Writing Quadratic Equations

If given a point and the vertex (h, k), then use _____.

If given a point and the x-intercepts p and q, then use _____.

If given three points, then _____.

Examples

1. The graph shows the parabolic path of a performer who is shot out of a cannon, where y is the height (in feet) and x is the horizontal distance traveled (in feet).
   a. Write an equation of the parabola.

   Human Cannonball

   Height (feet) vs Horizontal distance (feet), points (0, 15) and (50, 35)
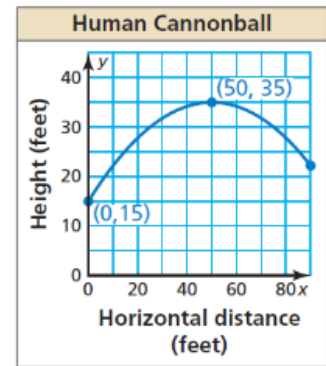
   b. The performer lands in a net 90 feet from the cannon. What is the height of the net?

2. Write an equation of the parabola that passes through the point $(-1, 2)$ and has vertex $(4, -9)$.

3. A meteorologist creates a parabola to predict the temperature tomorrow, where x is the number of hours after midnight and y is the temperature (in degrees Celsius).
   a. Write a function f that models the temperature over time.

   Temperature Forecast

   Temperature (°C) vs Hours after midnight, points (0, 9.6), (4, 0), (24, 0)
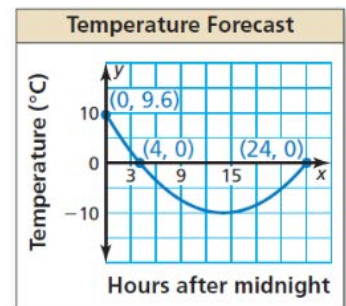
   b. What is the coldest temperature?

4. Write an equation of the parabola that passes through the point (2, 5) and has *x*-intercepts −2 and 4.

5. NASA can create a weightless environment by flying a plane in parabolic paths. The table shows heights *h* (in feet) of a plane *t* seconds after starting the flight path. After about 20.8 seconds, passengers begin to experience a weightless environment. Write and evaluate a function to approximate the height at which this occurs.

Time, *t*	Height, *h*
10	26,900
15	29,025
20	30,600
25	31,625
30	32,100
35	32,025
40	31,400

6. Write an equation of the parabola that passes through the points (−1, 4), (0, 1), and (2, 7).