

Quadratic Finding

The equation of the general quadratic curve is given by

$$y = ax^2 + bx + c.$$

The equation of the general cubic curve is given by

$$y = ax^3 + bx^2 + cx + d.$$

If a curve¹ passes through a given point, then that point represents a *solution* to the equation of the curve.

1. Find the equation of the quadratic curve that passes through (3, 15), (1, -1) and (0, -3).

$$y = 2x^2 - 3$$

2. Find the equation of the quadratic curve that passes through (1, 3), (3, 9) and (-2, 9).

$$y = x^2 - x + 3$$

3. Find the equation of the quadratic curve that passes through (1, 0), (5, 40) and (-2, -9).

$$y = x^2 + 4x - 5$$

4. Find the equation of the quadratic curve that passes through (7, -4), (-4, -37) and (2, 11).

$$y = -x^2 + 6x + 3$$

5. Find the equation of the quadratic curve that passes through (-2, 21), ($\frac{1}{2}$, 1) and ($\frac{2}{3}$, $\frac{13}{9}$).

$$y = 4x^2 - 2x + 1$$

6. Find the equation of the quadratic curve that passes through (1, $\frac{5}{2}$), (3, $\frac{19}{2}$) and (-1, $\frac{7}{2}$).

$$y = x^2 - \frac{1}{2}x + 2$$

7. Find the equation of the quadratic curve that passes through ($\frac{1}{2}$, $\frac{5}{8}$), (2, 1) and (-1, $\frac{5}{2}$).

$$y = \frac{1}{2}x^2 - x + 1$$

8. Find the equation of the *cubic* curve that passes through (0, 1), (1, 4), (-2, 1) and (3, 46).

$$y = x^3 + 2x^2 + 1$$

9. Find the equation of the *cubic* curve that passes through (1, 1), (3, 29), (-1, -3) and (-2, -11).

$$y = x^3 + x - 1$$

¹Or, for that matter, straight line