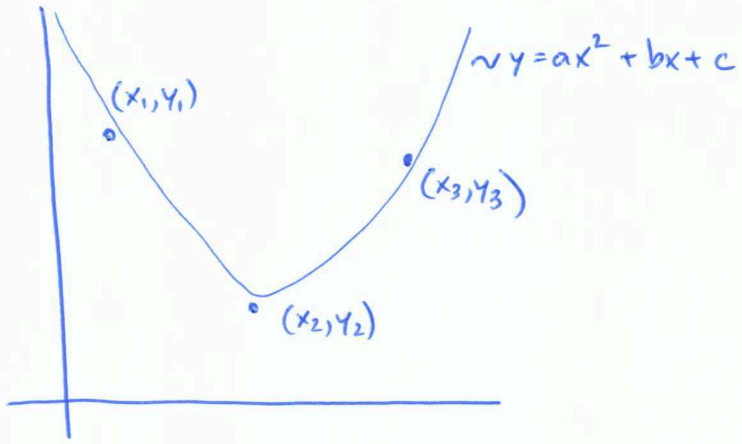
Fitting 3 points



sub points:

$$y_1 = ax_1^2 + bx_1 + c \quad (1)$$

$$y_2 = ax_2^2 + bx_2 + c \quad (2)$$

$$y_3 = ax_3^2 + bx_3 + c \quad (3)$$

solve for c in (3)

$$\boxed{c = y_3 - ax_3^2 - bx_3} \quad (3a)$$

sub (3a) into (1)

$$y_1 = ax_1^2 + bx_1 + [y_3 - ax_3^2 - bx_3]$$

$$y_1 - y_3 = a(x_1^2 - x_3^2) + b(x_1 - x_3) \quad (1a)$$

sub (3a) into (2)

$$y_2 - y_3 = a(x_2^2 - x_3^2) + b(x_2 - x_3) \quad (2a)$$

solve for b in (2a)

$$\boxed{b = \frac{y_2 - y_3 - a(x_2^2 - x_3^2)}{x_2 - x_3}} \quad (2b)$$

sub (2b) into (1a)

$$a(x_1^2 - x_3^2) = y_1 - y_3 - \left[\frac{y_2 - y_3 - a(x_2^2 - x_3^2)}{x_2 - x_3}\right](x_1 - x_3)$$

$$a(x_1^2 - x_3^2) = y_1 - y_3 - \frac{(y_2 - y_3)(x_1 - x_3)}{x_2 - x_3} + a\frac{(x_2^2 - x_3^2)(x_1 - x_3)}{x_2 - x_3}$$

$$a\left[(x_1^2 - x_3^2) - \frac{(x_2^2 - x_3^2)(x_1 - x_3)}{x_2 - x_3}\right] = y_1 - y_3 - \frac{(y_2 - y_3)(x_1 - x_3)}{x_2 - x_3}$$

$$a\left[(x_1^2 - x_3^2)(x_2 - x_3) - (x_2^2 - x_3^2)(x_1 - x_3)\right] = (y_1 - y_3)(x_2 - x_3) - (y_2 - y_3)(x_1 - x_3)$$

$$a = \frac{(y_1 - y_3)(x_2 - x_3) - (y_2 - y_3)(x_1 - x_3)}{(x_1^2 - x_3^2)(x_2 - x_3) - (x_2^2 - x_3^2)(x_1 - x_3)}$$

$$b = \frac{y_2 - y_3 - a(x_2^2 - x_3^2)}{x_2 - x_3}$$

$$c = y_3 - ax_3^2 - bx_3$$