

YOUR NAME: _____

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Read each problem **very carefully** before starting to solve it. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [4 points] Laura exercises daily by running a few miles. The following table gives some data relating her distance d (in miles) with the time t in minutes it takes her to cover that distance.

t	10	22	36	50	68
d	1	2	3	4	5

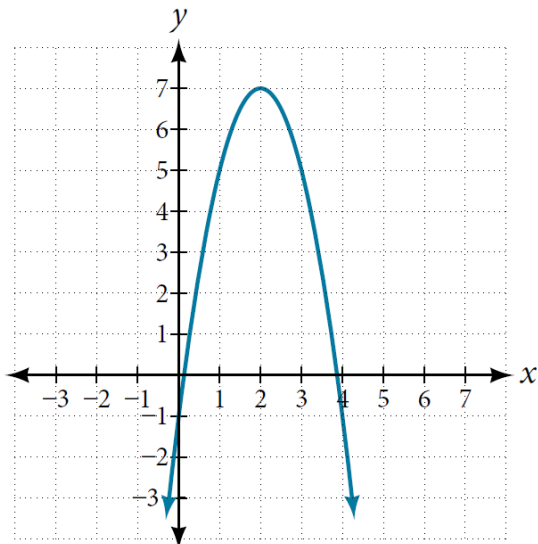
- (a) Give the linear regression line (i.e., the line of best fit) for the equation of the distance $d(t)$ as a function of time and the corresponding correlation coefficient r .

- (b) Using the regression line, estimate how much time it would take Laura to complete an upcoming 8-mile race. (Show all steps of your work by hand.)

2. [4 points] Write equations in standard form for the following parabolas.

(a) $f(x) = 2x^2 - 8x + 5$.

(b) $y = g(x)$ whose graph is shown on the left below.



3. [4 points] A small soccer stadium has 12,000 seats. The team owners found that, when the ticket price is set at \$30 the stadium is half-full whereas if the ticket price is set at \$10, the stadium fills up.
- (a) Find a linear equation giving the attendance y at a soccer game as a function of the price x the owners charge per ticket.
- (b) Find how the price x should be set so that the revenue R of the soccer club per game is maximum.