

## Part II

Answer all 8 questions in this part. Each correct answer will receive 2 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. Utilize the information provided for each question to determine your answer. Note that diagrams are not necessarily drawn to scale. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [16]

25 In attempting to solve the system of equations  $y = 3x - 2$  and  $6x - 2y = 4$ , John graphed the two equations on his graphing calculator. Because he saw only one line, John wrote that the answer to the system is the empty set. Is he correct? Explain your answer.

**26** A typical marathon is 26.2 miles. Allan averages 12 kilometers per hour when running in marathons.

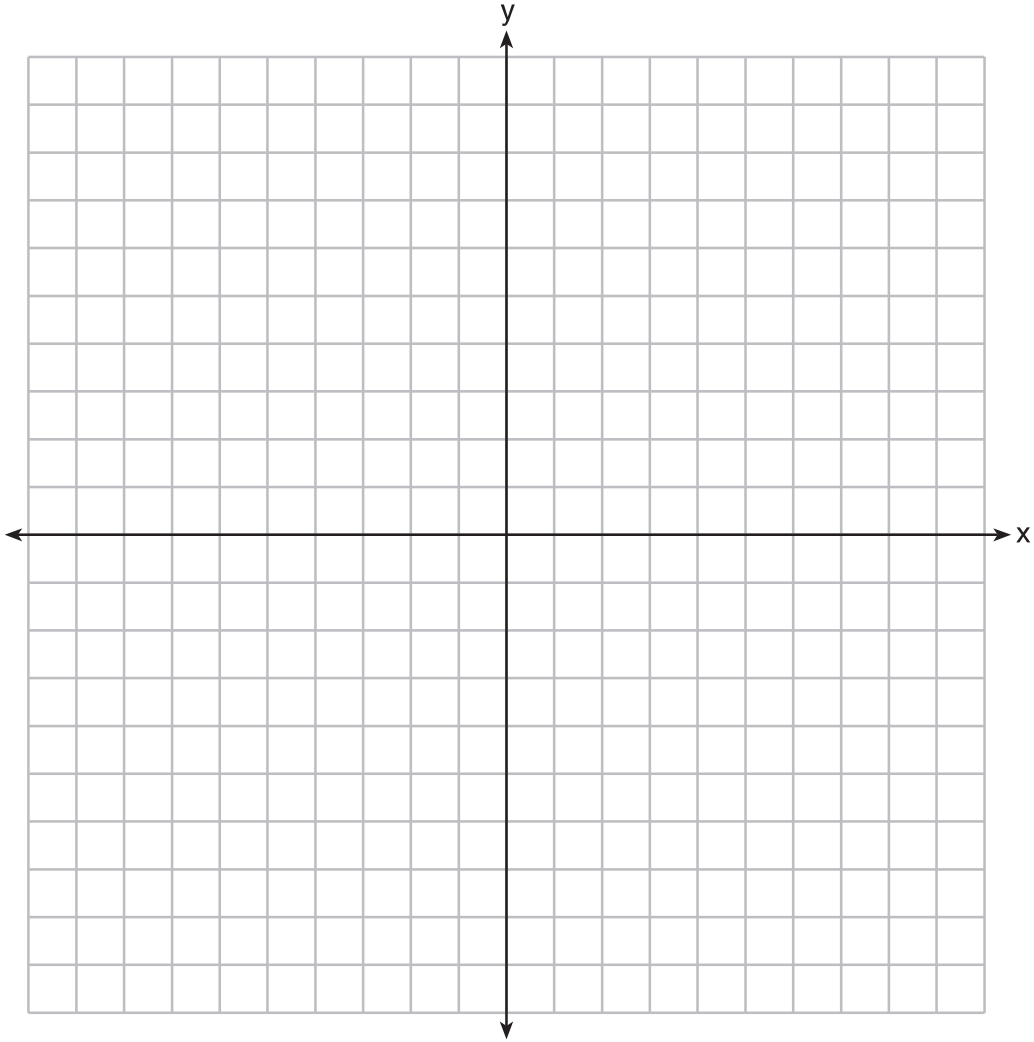
Determine how long it would take Allan to complete a marathon, to the *nearest tenth of an hour*. Justify your answer.

**27** Solve the inequality below:

$$1.8 - 0.4y \geq 2.2 - 2y$$

**28** Jakob is working on his math homework. He decides that the sum of the expression  $\frac{1}{3} + \frac{6\sqrt{5}}{7}$  must be rational because it is a fraction. Is Jakob correct? Explain your reasoning.

**29** Graph the inequality  $y > 2x - 5$  on the set of axes below.  
State the coordinates of a point in its solution.



**30** Sandy programmed a website's checkout process with an equation to calculate the amount customers will be charged when they download songs.

The website offers a discount. If one song is bought at the full price of \$1.29, then each additional song is \$.99.

State an equation that represents the cost,  $C$ , when  $s$  songs are downloaded.

Sandy figured she would be charged \$52.77 for 52 songs. Is this the correct amount? Justify your answer.

- 31** A family is traveling from their home to a vacation resort hotel. The table below shows their distance from home as a function of time.

<b>Time</b> (hrs)	0	2	5	7
<b>Distance</b> (mi)	0	140	375	480

Determine the average rate of change between hour 2 and hour 7, including units.

**32** Nora says that the graph of a circle is a function because she can trace the whole graph without picking up her pencil.

Mia says that a circle graph is *not* a function because multiple values of  $x$  map to the same  $y$ -value.

Determine if either one is correct, and justify your answer completely.