Use this space for computations.

20 The formula for electrical power, P, is $P = I^2R$, where I is current and R is resistance. The formula for I in terms of P and R is

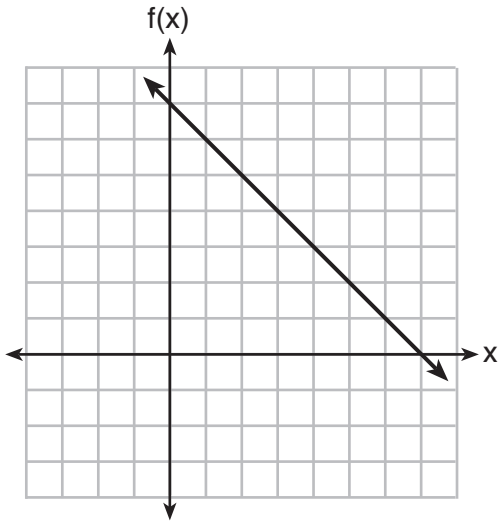
(1) $I = \left(\frac{P}{R}\right)^2$

(2) $I = \sqrt{\frac{P}{R}}$

(3) $I = (P - R)^2$

(4) $I = \sqrt{P - R}$

21 The functions $f(x)$, $q(x)$, and $p(x)$ are shown below.



$q(x) = (x - 1)^2 - 6$

x	p(x)
2	5
3	4
4	3
5	4
6	5

When the input is 4, which functions have the same output value?

(1) $f(x)$ and $q(x)$, only

(2) $f(x)$ and $p(x)$, only

(3) $q(x)$ and $p(x)$, only

(4) $f(x)$, $q(x)$, and $p(x)$

22 Using the substitution method, Vito is solving the following system of equations algebraically:

$$y + 3x = -4$$
$$2x - 3y = -21$$

Which equivalent equation could Vito use?

(1) $2(-3x - 4) + 3x = -21$

(2) $2(3x - 4) + 3x = -21$

(3) $2x - 3(-3x - 4) = -21$

(4) $2x - 3(3x - 4) = -21$

Use this space for computations.

23 Materials A and B decay over time. The function for the amount of material A is $A(t) = 1000(0.5)^{2t}$ and for the amount of material B is $B(t) = 1000(0.25)^t$, where t represents time in days. On which day will the amounts of material be equal?

(1) initial day, only
(2) day 2, only
(3) day 5, only
(4) every day

24 The following conversion was done correctly:

$$\frac{3 \text{ miles}}{1 \text{ hour}} \bullet \frac{1 \text{ hour}}{60 \text{ minutes}} \bullet \frac{5280 \text{ feet}}{1 \text{ mile}} \bullet \frac{12 \text{ inches}}{1 \text{ foot}}$$

What were the final units for this conversion?

(1) minutes per foot
(2) minutes per inch
(3) feet per minute
(4) inches per minute

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 Solve algebraically for x: $3600 + 1.02x < 2000 + 1.04x$

26 The number of people who attended a school's last six basketball games increased as the team neared the state sectional games. The table below shows the data.

Game	13	14	15	16	17	18
Attendance	348	435	522	609	696	783

State the type of function that best fits the given data. Justify your choice of a function type.

27 Solve $x^2 - 8x - 9 = 0$ algebraically.

Explain the first step you used to solve the given equation.