**ALGEBRA I**

Tuesday, June 12, 2018 — 1:15 to 4:15 p.m., only

Student Name _____

Steve Watson

School Name _____

www.jmap.org

The possession or use of any communications device is strictly prohibited when taking this examination. If you have or use any communications device, no matter how briefly, your examination will be invalidated and no score will be calculated for you.

Print your name and the name of your school on the lines above.

A separate answer sheet for **Part I** has been provided to you. Follow the instructions from the proctor for completing the student information on your answer sheet.

This examination has four parts, with a total of 37 questions. You must answer all questions in this examination. Record your answers to the Part I multiple-choice questions on the separate answer sheet. Write your answers to the questions in **Parts II, III, and IV** directly in this booklet. All work should be written in pen, except for graphs and drawings, which should be done in pencil. 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.

The formulas that you may need to answer some questions in this examination are found at the end of the examination. This sheet is perforated so you may remove it from this booklet.

Scrap paper is not permitted for any part of this examination, but you may use the blank spaces in this booklet as scrap paper. A perforated sheet of scrap graph paper is provided at the end of this booklet for any question for which graphing may be helpful but is not required. You may remove this sheet from this booklet. Any work done on this sheet of scrap graph paper will *not* be scored.

When you have completed the examination, you must sign the statement printed at the end of the answer sheet, indicating that you had no unlawful knowledge of the questions or answers prior to the examination and that you have neither given nor received assistance in answering any of the questions during the examination. Your answer sheet cannot be accepted if you fail to sign this declaration.

Notice ...

A graphing calculator and a straightedge (ruler) must be available for you to use while taking this examination.

DO NOT OPEN THIS EXAMINATION BOOKLET UNTIL THE SIGNAL IS GIVEN.

Part I

Answer all 24 questions in this part. Each correct answer will receive 2 credits. No partial credit will be allowed. Utilize the information provided for each question to determine your answer. Note that diagrams are not necessarily drawn to scale. For each statement or question, choose the word or expression that, of those given, best completes the statement or answers the question. Record your answers on your separate answer sheet. [48]

1 The solution to $4p + 2 < 2(p + 5)$ is D_2 Use this space for computations.

(1) $p > -6$
 (2) $p < -6$
 (3) $p > 4$
 (4) $p < 4$

$$\begin{array}{l|l|l} 4p+2 < 2(p+5) & & \\ \hline 2p+1 < p+5 & & \\ \hline p+1 < 5 & & \\ \hline p < 4 & & \end{array}$$

2 If $k(x) = 2x^2 - 3\sqrt{x}$, then $k(9)$ is

(1) 315
 (2) 307
 (3) 159
 (4) 153

$$\begin{aligned} k(x) &= 2x^2 - 3\sqrt{x} \\ k(9) &= 2(9)^2 - 3\sqrt{9} \\ k(9) &= 2(81) - 3(3) \\ k(9) &= 162 - 9 \\ k(9) &= 153 \end{aligned}$$

3 The expression $3(x^2 + 2x - 3) - 4(4x^2 - 7x + 5)$ is equivalent to

(1) $-13x - 22x + 11$
 (2) $-13x^2 + 34x - 29$
 (3) $19x^2 - 22x + 11$
 (4) $19x^2 + 34x - 29$

$$\begin{aligned} &3(x^2 + 2x - 3) - 4(4x^2 - 7x + 5) \\ &3x^2 + 6x - 9 - 16x^2 + 28x - 20 \\ &3x^2 - 16x^2 + 6x + 28x - 9 - 20 \\ &-13x^2 + 34x - 29 \end{aligned}$$

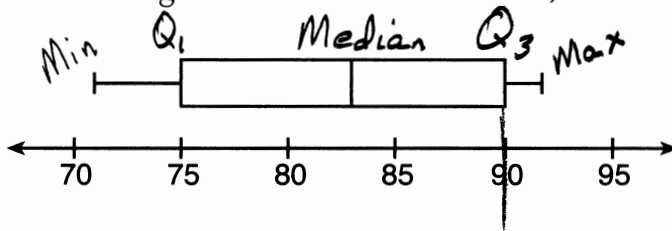
4 The zeros of the function $p(x) = x^2 - 2x - 24$ are

(1) -8 and 3
 (2) -6 and 4
 (3) -4 and 6
 (4) -3 and 8

$$\begin{aligned} p(x) &= x^2 - 2x - 24 \\ 0 &= x^2 - 2x - 24 \\ 0 &= (x-6)(x+4) \\ \text{if } x-6 &= 0 \\ \text{then } x &= 6 \\ \text{if } x+4 &= 0 \\ \text{then } x &= -4 \end{aligned}$$

Use this space for computations.

- 5 The box plot below summarizes the data for the average monthly high temperatures in degrees Fahrenheit for Orlando, Florida.



The third quartile is

- (1) 92 (3) 83
 (2) 90 (4) 71

- 6 Joy wants to buy strawberries and raspberries to bring to a party. Strawberries cost \$1.60 per pound and raspberries cost \$1.75 per pound. If she only has \$10 to spend on berries, which inequality represents the situation where she buys x pounds of strawberries and y pounds of raspberries?

- (1) $1.60x + 1.75y \leq 10$ (3) $1.75x + 1.60y \leq 10$
 (2) $1.60x + 1.75y \geq 10$ (4) $1.75x + 1.60y \geq 10$

$1.60x$ → cost of strawberries
 $1.75y$ → cost of raspberries
 $1.60x + 1.75y \leq 10$

- 7 On the main floor of the Kodak Hall at the Eastman Theater, the number of seats per row increases at a constant rate. Steven counts 31 seats in row 3 and 37 seats in row 6. How many seats are there in row 20?

- (1) 65 (3) 69
 (2) 67 (4) 71

(X) Row #	(Y) # Seats
3	31
4	33
5	35
6	37

- 8 Which ordered pair below is not a solution to $f(x) = x^2 - 3x + 4$?

- yes (1) (0,4) yes (3) (5,14)
 yes (2) (1.5,1.75) No (4) (-1,6)

$f(x) = x^2 - 3x + 4$

x	y
-1	8
0	4
1	2
2	2
3	4
4	8
5	14

Input function in graphing calculator and inspect table of values.

$m = \text{rate of change} = \frac{\Delta Y}{\Delta X} = \frac{2}{1}$

$y = 2x + 25$

$f(20) = 2(20) + 25$

$f(20) = 40 + 25$

$f(20) = 65$

9 Students were asked to name their favorite sport from a list of basketball, soccer, or tennis. The results are shown in the table below.

	Basketball	Soccer	Tennis
Girls	42	58	20
Boys	84	41	5

Totals 126 + 99 + 25 = 250

What percentage of the students chose soccer as their favorite sport?

- (1) 39.6% (3) 50.4%
 (2) 41.4% (4) 58.6%

Use this space for computations.

Like Soccer: $58 + 41 = 99$
 Total: $126 + 99 + 25 = 250$

$$\frac{99}{250} = \frac{x}{100}$$

$$9900 = 250x$$

$$\frac{9900}{250} = x$$

$$39.6 = x$$

10 The trinomial $x^2 - 14x + 49$ can be expressed as

- (1) $(x - 7)^2$ (3) $(x - 7)(x + 7)$
 (2) $(x + 7)^2$ (4) $(x - 7)(x + 2)$

$$(x-7)(x-7)$$

$$x^2 - 7x - 7x + 49$$

$$x^2 - 14x + 49 \checkmark$$

11 A function is defined as $\{(0,1), (2,3), (5,8), (7,2)\}$. Isaac is asked to create one more ordered pair for the function. Which ordered pair can he add to the set to keep it a function?

- ~~(1) (0,2)~~ zero is paired w/ 1 ~~(3) (7,0)~~ 7 is paired with 2
~~(2) (5,3)~~ 5 is paired w/ 8 (4) (1,3)

For each value of x in a function, there can be one and only one value of y .

12 The quadratic equation $x^2 - 6x = 12$ is rewritten in the form $(x + p)^2 = q$, where q is a constant. What is the value of p ?

- (1) -12 (3) -3
 (2) -9 (4) 9

Complete the Square

$$x^2 - 6x = 12$$

$$x^2 - 6x + (-3)^2 = 12 + (-3)^2$$

$$(x-3)^2 = 12 + 9$$

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

$$(x+p)^2 = q$$

$$p = -3$$

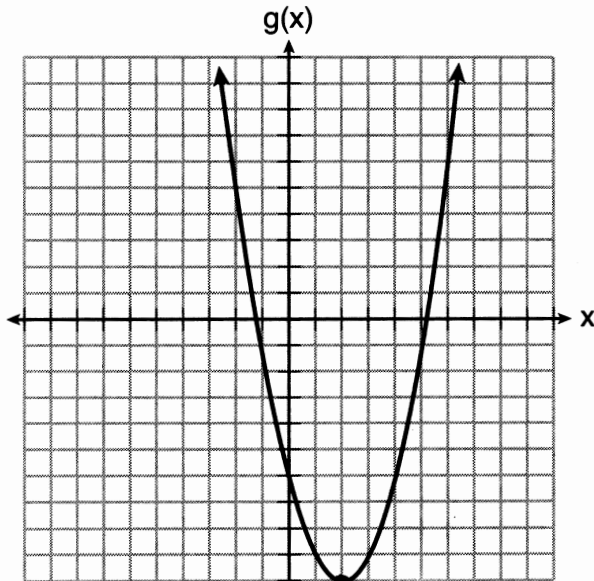
Use this space for computations.

13 Which of the quadratic functions below has the smallest minimum value?

vertex is at $(1, -7)$
 so min is -7
 $h(x) = x^2 + 2x - 6$
 (1)

vertex is at $(-3.5, -2.25)$
 so min is (-2.25)
 $k(x) = (x + 5)(x + 2)$
 (3)

Use a graphing calculator!



x	f(x)
-1	-2
0	-5
1	-6
2	-5
3	-2

Vertex is at $(1, -6)$
 so min is -6 .

Answer → (2)
 vertex is at $(2, -10)$
 so min is -10

(4)

14 Which situation is not a linear function?

- (1) A gym charges a membership fee of \$10.00 down and \$10.00 per month.
- (2) A cab company charges \$2.50 initially and \$3.00 per mile.
- (3) A restaurant employee earns \$12.50 per hour.
- (4) A \$12,000 car depreciates 15% per year.

constant rates of change mean linear functions

exponential rate of change

Use this space for
computations.

15 The Utica Boilermaker is a 15-kilometer road race. Sara is signed up to run this race and has done the following training runs:

- ✓ I. 10 miles
- X II. 44,880 feet
- X III. 15,560 yards

Which run(s) are at least 15 kilometers?

- (1) I, only
- (2) II, only
- (3) I and III
- (4) II and III

16 If $f(x) = x^2 + 2$, which interval describes the range of this function?

- X (1) $(-\infty, \infty)$ domain
- (2) $[0, \infty)$
- (3) $[2, \infty)$ range
- (4) $(-\infty, 2]$

Put in graphing calculator and inspect the graph!

17 The amount Mike gets paid weekly can be represented by the expression $2.50a + 290$, where a is the number of cell phone accessories he sells that week. What is the constant term in this expression and what does it represent?

- (1) $2.50a$, the amount he is guaranteed to be paid each week
- (2) $2.50a$, the amount he earns when he sells a accessories
- (3) 290, the amount he is guaranteed to be paid each week
- (4) 290, the amount he earns when he sells a accessories

Mike gets \$2.50 for every cell phone accessory plus a constant amount of \$290⁰⁰ each week.

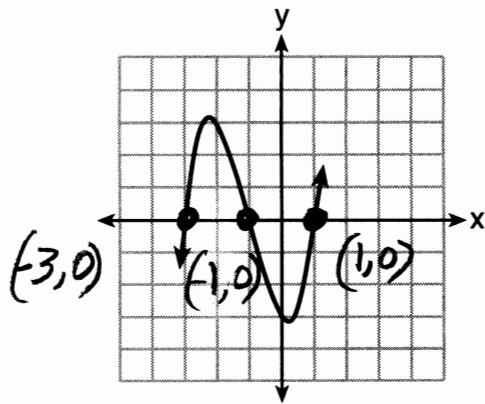
Use the formula page!

$$\begin{aligned} 1 \text{ km} &= 0.62 \text{ miles} \\ 15 \text{ km} &= 15(0.62) \text{ miles} \\ 15 \text{ km} &= 9.3 \text{ miles} \\ 15 \text{ km} &< 10 \text{ miles} \end{aligned}$$

$$\begin{aligned} 1 \text{ mile} &= 5280 \text{ ft} \\ 9.3 \text{ miles} &= 9.3(5280 \text{ ft}) \\ 9.3 \text{ miles} &= 49,104 \text{ ft.} \\ 44,880 \text{ ft} &< 49,104 \text{ ft.} \end{aligned}$$

$$\begin{aligned} 1 \text{ mile} &= 1760 \text{ yards} \\ 9.3 \text{ miles} &= 9.3(1760 \text{ yards}) \\ 9.3 \text{ miles} &= 16,368 \text{ yards} \\ 15,560 \text{ yds} &< 16,368 \text{ yds} \end{aligned}$$

18 A cubic function is graphed on the set of axes below.



Use this space for computations.

Zeros	Factors
$x = -3$	$(x+3)$
$x = -1$	$(x+1)$
$x = 1$	$(x-1)$

Which function could represent this graph?

(1) $f(x) = (x - 3)(x - 1)(x + 1)$

(2) $g(x) = (x + 3)(x + 1)(x - 1)$

(3) $h(x) = (x - 3)(x - 1)(x + 3)$

(4) $k(x) = (x + 3)(x + 1)(x - 3)$

$$0 = (x+3)(x+1)(x-1)$$

$$g(x) = (x+3)(x+1)(x-1)$$

Check by inputting function in a graphing calculator and inspecting the graph.

Use this space for computations.

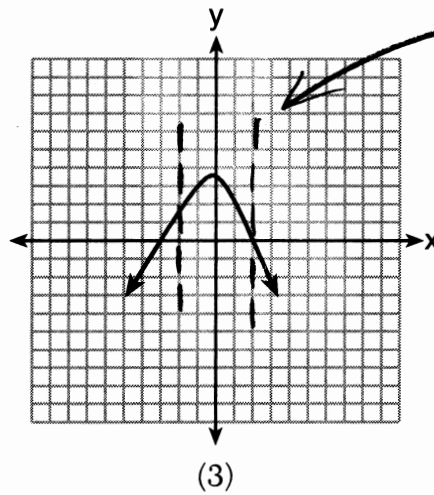
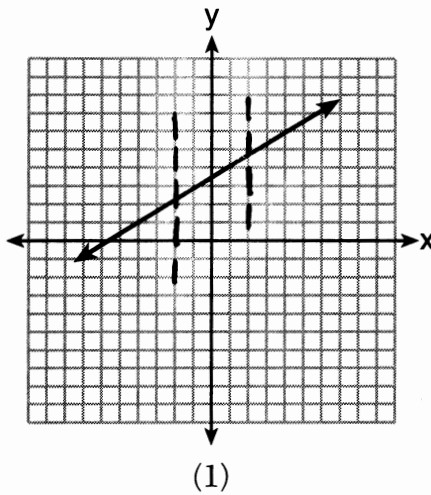
19 Mrs. Allard asked her students to identify which of the polynomials below are in standard form and explain why.

- I. $15x^4 - 6x + 3x^2 - 1$ No
- II. $12x^3 + 8x + 4$ Yes
- III. $2x^5 + 8x^2 + 10x$ Yes

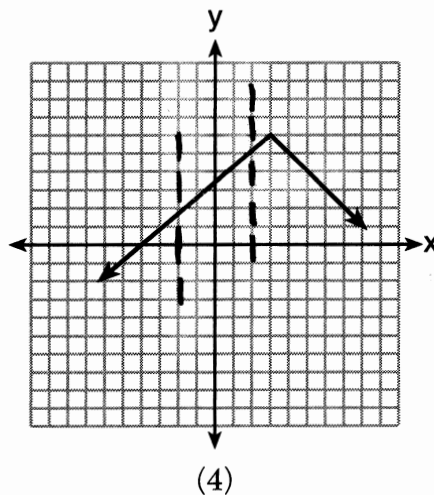
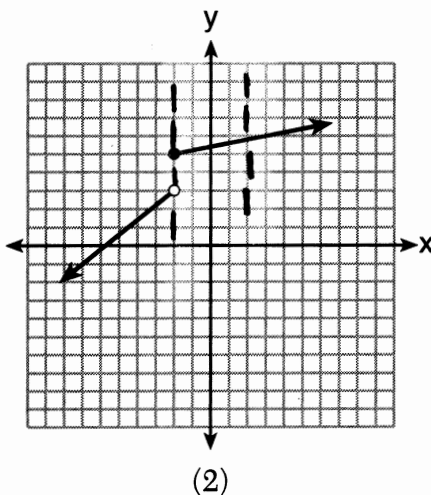
Which student's response is correct?

- (1) Tyler said I and II because the coefficients are decreasing.
- (2) Susan said only II because all the numbers are decreasing.
- (3) Fred said II and III because the exponents are decreasing.
- (4) Alyssa said II and III because they each have three terms.

20 Which graph does *not* represent a function that is always increasing over the entire interval $-2 < x < 2$?



goes up left to right
goes up, then goes down.



Use this space for computations.

21 At an ice cream shop, the profit, $P(c)$, is modeled by the function $P(c) = 0.87c$, where c represents the number of ice cream cones sold. An appropriate domain for this function is

- (1) an integer ≤ 0 (3) a rational number ≤ 0
 (2) an integer ≥ 0 (4) a rational number ≥ 0

You can't sell a negative # of cones or a fraction of a cone.

22 How many real-number solutions does $4x^2 + 2x + 5 = 0$ have?

- (1) one (3) zero
 (2) two (4) infinitely many

$b^2 - 4ac$
 $a=4, b=2, c=5$
 $(-2)^2 - 4(4)(5)$
 $4 - 80$
 -76 No real solutions

23 Students were asked to write a formula for the length of a rectangle by using the formula for its perimeter, $p = 2l + 2w$. Three of their responses are shown below.

- I. $l = \frac{1}{2}p - w$
 II. $l = \frac{1}{2}(p - 2w)$
 III. $l = \frac{p - 2w}{2}$

$p = 2l + 2w$
 $p - 2w = 2l$
 $\frac{p - 2w}{2} = l$
 $\frac{1}{2}(p - 2w) = l$
 $\frac{1}{2}p - w = l$

Which responses are correct?

- (1) I and II, only (3) I and III, only
 (2) II and III, only (4) I, II, and III

Check in graphing calculator: The parabola does not cross the x-axis, so there are no zeros (solutions)

24 If $a_n = n(a_{n-1})$ and $a_1 = 1$, what is the value of a_5 ?

- (1) 5 (3) 120
 (2) 20 (4) 720

n	1	2	3	4	5
a_n	1	2	6	24	120
		2×1	3×2	4×6	5×24

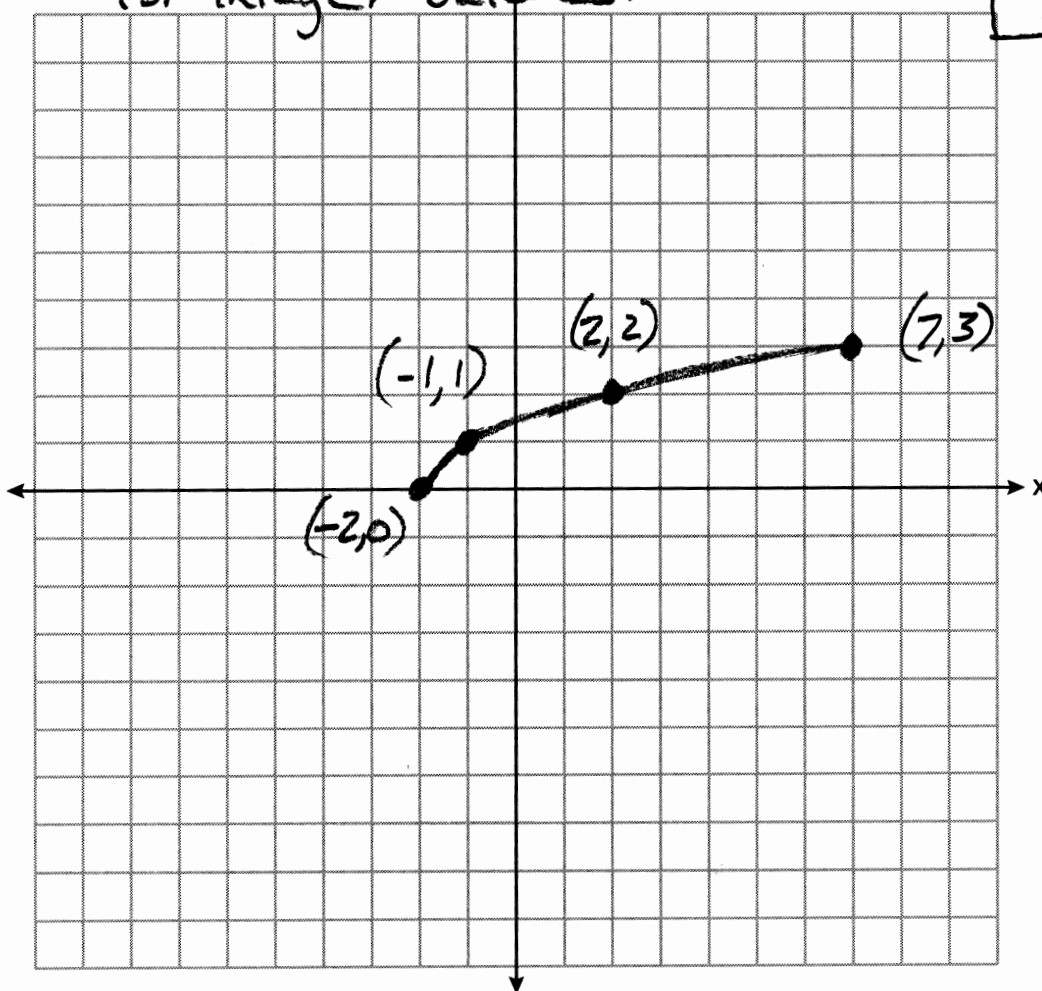
Part II

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 Graph $f(x) = \sqrt{x+2}$ over the domain $-2 \leq x \leq 7$.

Strategy: Input function in graphing calculator and use table of values to plot the graph for integer values.

x	$f(x)$
-2	0
-1	1
2	2
7	3



26 Caleb claims that the ordered pairs shown in the table below are from a nonlinear function.

Δx	x	f(x)	Δy
1	0	2	2
1	1	4	4
1	2	8	8
1	3	16	8

$$\frac{\Delta y}{\Delta x} \mid \frac{2}{1} \neq \frac{4}{1} \neq \frac{8}{1}$$

State if Caleb is correct. Explain your reasoning.

Caleb is correct. The function does not have a constant rate of change, so it is not a linear function.

27 Solve for x to the nearest tenth: $x^2 + x - 5 = 0$.

$$a=1 \quad b=1 \quad c=-5$$

$$X = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$X = \frac{-(1) \pm \sqrt{(1)^2 - 4(1)(-5)}}{2(1)}$$

$$X = \frac{-1 \pm \sqrt{1 + 20}}{2}$$

$$X = \frac{-1 \pm \sqrt{21}}{2}$$

$$X = \frac{-1 \pm 4.58}{2}$$

$$X = \frac{-1 + 4.58}{2} = \frac{3.58}{2} = 1.79 = \boxed{1.8}$$

$$X = \frac{-1 - 4.58}{2} = \frac{-5.58}{2} = -2.79 = \boxed{-2.8}$$

Check using graphing calculator.

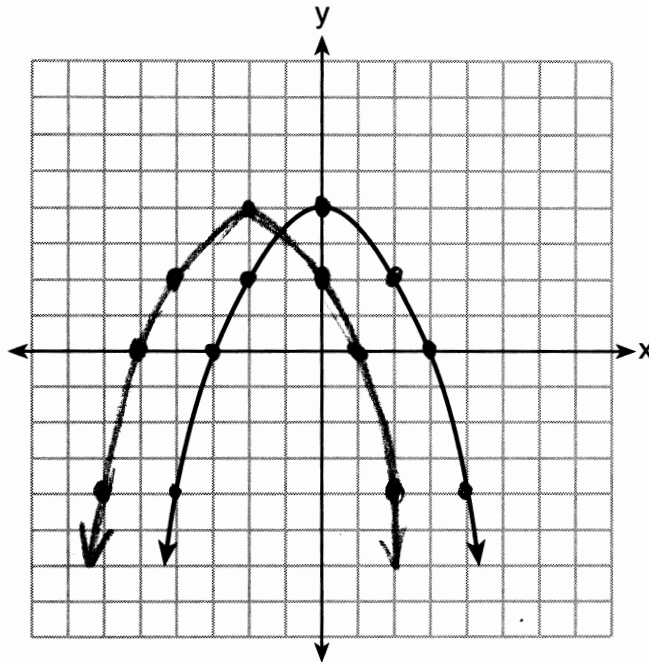
$$x = 1.7912878$$

$$y = 0 \quad \checkmark$$

$$x = -2.791288$$

$$y = 0 \quad \checkmark$$

28 The graph of the function $p(x)$ is represented below. On the same set of axes, sketch the function $p(x + 2)$.



Every point moves 2 units left.

- 29 When an apple is dropped from a tower 256 feet high, the function $h(t) = -16t^2 + 256$ models the height of the apple, in feet, after t seconds. Determine, algebraically, the number of seconds it takes the apple to hit the ground.

$$h(t) = -16t^2 + 256$$
$$h(t) = 0 \quad 0 = -16t^2 + 256$$
$$16t^2 = 256$$
$$t^2 = 16$$
$$t = \boxed{4 \text{ seconds}}$$

answer

Check

$$h(4) = -16(4)^2 + 256$$
$$h(4) = -16(16) + 256$$
$$h(4) = -256 + 256$$
$$h(4) = 0 \checkmark$$

30 Solve the equation below algebraically for the exact value of x .

$$6 - \frac{2}{3}(x + 5) = 4x$$

$$6 = 4x + \frac{2}{3}(x + 5)$$

$$6 = 4x + \frac{2x}{3} + \frac{10}{3}$$

$$18 = 12x + 2x + 10$$

M(3)

$$8 = 14x$$

D(14)

$$\frac{8}{14} = x$$

answer $\boxed{\frac{4}{7}} = x$

Check $6 - \frac{2}{3}\left(\frac{4}{7} + 5\right) = 4\left(\frac{4}{7}\right)$

$$6 - \frac{2}{3}\left(5\frac{4}{7}\right) = \frac{16}{7}$$

$$6 - \frac{2}{3}\left(\frac{39}{7}\right) = \frac{16}{7}$$

$$6 - \frac{78}{21} = \frac{16}{7}$$

$$\frac{126}{21} - \frac{78}{21} = \frac{48}{21}$$

$$\frac{48}{21} = \frac{48}{21} \quad \checkmark$$

31 Is the product of $\sqrt{16}$ and $\frac{4}{7}$ rational or irrational? Explain your reasoning.

A rational number is a number that can be expressed as the ratio of two integers, as in $\frac{a}{b}$, where both a and b are integers.

$\sqrt{16}$ is rational because $\sqrt{16} = 4 = \frac{4}{1}$.

$\frac{4}{7}$ is rational because it is a ratio of two integers.

$$(\sqrt{16})\left(\frac{4}{7}\right) = \left(\frac{4}{1}\right)\left(\frac{4}{7}\right) = \frac{16}{7}$$

← integer
← integer

Answer

Rational

Explanation

The product of two rational numbers is always rational.

32 On the set of axes below, graph the piecewise function:

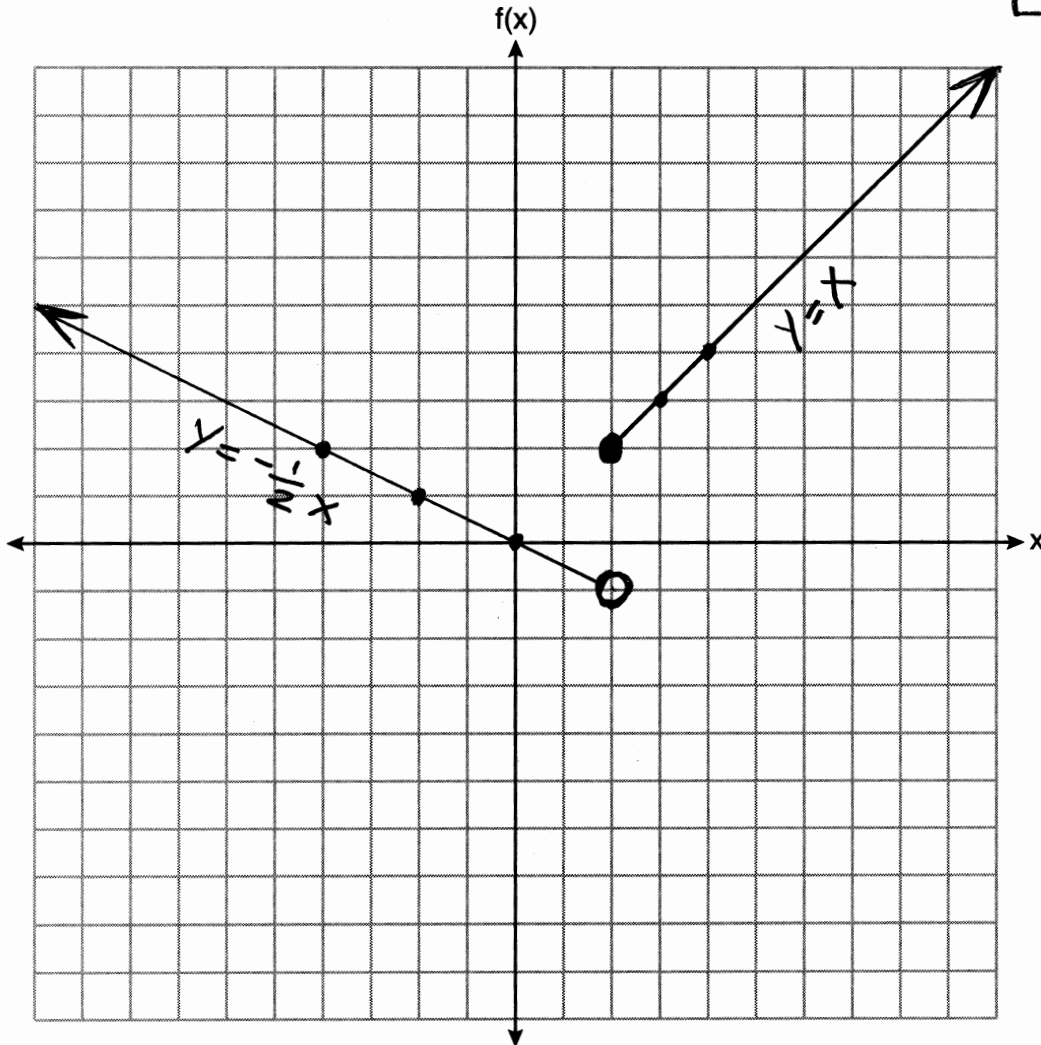
$$f(x) = \begin{cases} -\frac{1}{2}x, & x < 2 \\ x, & x \geq 2 \end{cases}$$

$$f(x) = \frac{1}{2}x$$

x	y
-2	1
0	0
1	-0.5
(2)	(-1)

$$f(x) = x$$

x	y
2	2
3	3
4	4



Part III

Answer all 4 questions in this part. Each correct answer will receive 4 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]

33 A population of rabbits in a lab, $p(x)$, can be modeled by the function $p(x) = 20(1.014)^x$, where x represents the number of days since the population was first counted.

Explain what 20 and 1.014 represent in the context of the problem.

20 represents the initial # of rabbits
1.014 represents the rate of growth

Determine, to the nearest tenth, the average rate of change from day 50 to day 100.

Step¹ Input $p(x) = 20(1.014)^x$ in graphing calculator

Step² Use table to find # of rabbits on day 50 and day 100

Day	$P(x)$ # Rabbits
50	40.08
100	80.32

Step³ Calculate average rate of change.

$$m = \frac{Y_2 - Y_1}{X_2 - X_1} = \frac{80.32 - 40.08}{100 - 50} = \frac{40.24}{50} \approx \boxed{.8} \text{ rabbits per day}$$

- 34 There are two parking garages in Beacon Falls. Garage A charges \$7.00 to park for the first 2 hours, and each additional hour costs \$3.00. Garage B charges \$3.25 per hour to park.

When a person parks for at least 2 hours, write equations to model the cost of parking for a total of x hours in Garage A and Garage B.

$$\text{For } x \geq 2, A(x) = 7 + 3(x-2)$$

$$\text{For } x \geq 2, B(x) = 6.50 + 3.25(x-2)$$

Determine algebraically the number of hours when the cost of parking at both garages will be the same.

$$A(x) = B(x)$$

$$7 + 3(x-2) = 6.50 + 3.25(x-2)$$

$$7 + 3x - 6 = 6.50 + 3.25x - 6.50$$

$$3x + 1 = 3.25x$$

$$1 = .25x$$

$$\frac{1}{.25} = x$$

$$\boxed{4} = x$$

Check

Hrs	A cost	B cost
2	\$ 7	\$ 6.50
3	\$ 10	\$ 9.75
4	\$ 13	\$ 13

✓

35 On the set of axes below, graph the following system of inequalities:

$$y_1 \leq \frac{-3x+14}{2}$$

$$2y + 3x \leq 14$$

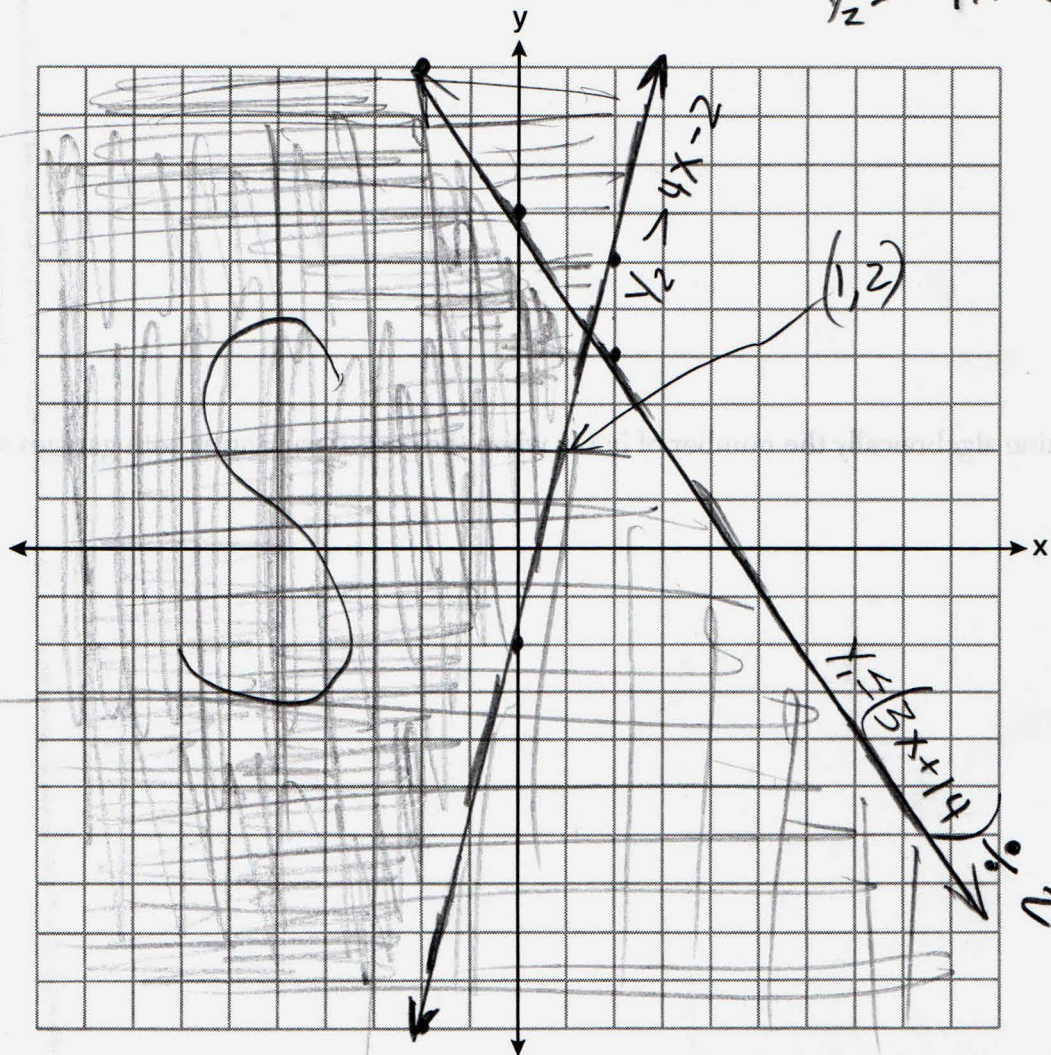
$$4x - y < 2$$

$$-y < -4x + 2$$

$$y_2 > 4x - 2$$

Input
in EC

X	Y ₁	Y ₂
-2	10	-10
0	7	-2
2	4	6



Determine if the point (1,2) is in the solution set. Explain your answer.

$$(1,2) \quad 2y + 3x \leq 14$$

$$(1,2) \quad 4x - y < 2$$

$$2(2) + 3(1) \leq 14$$

$$4(1) - (2) < 2$$

$$4 + 3 \leq 14$$

$$4 - 2 < 2$$

$$7 \leq 14 \quad \checkmark$$

$$2 < 2 \quad \text{No}$$

Explanation: (1,2) is not in the solution set because it does not satisfy both inequalities.

36 The percentage of students scoring 85 or better on a mathematics final exam and an English final exam during a recent school year for seven schools is shown in the table below.

Percentage of Students Scoring 85 or Better	
Mathematics, x	English, y
27	46
12	28
13	45
10	34
30	56
45	67
20	42

Input in graphing calculator.

Write the linear regression equation for these data, rounding all values to the nearest hundredth.

$$y = ax + b$$

$$a = .9577$$

$$b = 23.9486$$

$$r = .9205$$

$$y = .96x + 23.95$$

State the correlation coefficient of the linear regression equation, to the nearest hundredth. Explain the meaning of this value in the context of these data.

$$.92$$

Explanation:

There is a strong positive correlation between scores ≥ 85 on the mathematics and English exams in the seven schools.

Part IV

Answer the question in this part. A correct answer will receive 6 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. Utilize the information provided to determine your answer. Note that diagrams are not necessarily drawn to scale. 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. [6]

37 Dylan has a bank that sorts coins as they are dropped into it. A panel on the front displays the total number of coins inside as well as the total value of these coins. The panel shows 90 coins with a value of \$17.55 inside of the bank.

↪ convert to 1755 cents $d = \# \text{dimes}$
 $q = \# \text{quarters}$

If Dylan only collects dimes and quarters, write a system of equations in two variables or an equation in one variable that could be used to model this situation.

$$\text{Eq. 1} \quad 10d + 25q = 1755$$

$$\text{Eq. 2} \quad d + q = 90$$

$$\text{Eq 2 times 10} \quad 10d + 10q = 900$$

Using your equation or system of equations, algebraically determine the number of quarters Dylan has in his bank.

$$\begin{array}{r} \text{subtract} \quad 10d + 25q = 1755 \\ \quad \quad \quad 10d + 10q = 900 \\ \hline \quad \quad \quad 15q = 855 \\ \quad \quad \quad q = \frac{855}{15} \\ \quad \quad \quad q = \boxed{57} \end{array}$$

Question 37 is continued on the next page.

Question 37 continued

Dylan's mom told him that she would replace each one of his dimes with a quarter. If he uses all of his coins, determine if Dylan would then have enough money to buy a game priced at \$20.98 if he must also pay an 8% sales tax. Justify your answer.

If Dylan's mom replaces each dime with a quarter, then Dylan will have 90 quarters.

$$90 \times 25 = 2250 \text{ cents} \\ \text{or } \$22.50$$

The game costs \$20.98 plus 8% sales tax.

$$\begin{array}{r} \$20.98 \\ \times 1.08 \\ \hline \approx \$22.65 \end{array}$$

Dylan will not have enough.
He needs \$22.65, but only has \$22.50.