Student Name: **Key**

Date: _____

Final Exam Review

1) Which numerical expression represents *twenty less than the quotient of eighteen and 13.8?*

- ○ $18(13.8) - 20$
- ○ $20 - 18(13.8)$
- ○ $20 - 18 \div 13.8$
- ◉ $18 \div 13.8 - 20$

2) Drag the steps used to evaluate the expression to arrange them in the correct order.

PEMDAS

$7 - 3(5^3 + 1) \div 6$

Divide.	1)	Power
Subtract.	2)	Add
Simplify the power.	3)	Multiply
Multiply.	4)	Divide
Add.	5)	Subtract

3) Select all of the verbal expressions that represent $\frac{10}{3} + 4(9)$.

- ☐ the quotient of four and nine more than the product of ten and three
- ☑ ten divided by three plus four times nine
- ☑ ten divided by three plus the product of four and nine
- ☑ the quotient of ten and three increased by the product of four and nine
- ☐ the product of ten and three added to the quotient of four and nine

4) Fill in the blanks using the available answer choices.

Which algebraic expression represents each verbal expression?

a. **4.2** fewer than the product of 12 and a number __$12n - 4.2$__
(Blank 1)

b. **4.2** decreased by the quantity 12 plus a number __4(12+n)~~ $4.2 - (12 + n)$__
(Blank 2)

c. **4.2** minus the product of 12 and a number __$4.2 - 12n$__
(Blank 3)

d. **4.2** less than the sum of 12 and a number __$(12 + n) - 4.2$__
(Blank 4)

Blank 1 options	Blank 2 options	Blank 3 options	Blank 4 options
• $12n - 4.2$	• $12n - 4.2$	• $12n - 4.2$	• $12n - 4.2$
• $4.2 - 12n$	• $4.2 - 12n$	• $4.2 - 12n$	• $4.2 - 12n$
• $(12 + n) - 4.2$	• $(12 + n) - 4.2$	• $(12 + n) - 4.2$	• $(12 + n) - 4.2$
• $4.2 - (12 + n)$	• $4.2 - (12 + n)$	• $4.2 - (12 + n)$	• $4.2 - (12 + n)$

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5) The value of $5x^2 - 11x + 18$ is ____20.4____ when $x = 2.4$ and
____~~30~~ 96____ when $x = -3$.

6) HIKING The table shows the lengths of several trails Tonya can take when she goes hiking.

Trail	Length (miles)
A	2.4
B	3.18
C	9.5
D	4.29
E	6.8

Tonya hiked Trail A five times, Trail E three times, and Trail C one time over the last month.

The expression ____5____(2.4) + ____3____(6.8) + ____9.5____
could be used to determine the total length Tonya hiked.

The total length is ____41.9____ miles.

7) Which property can be used to show that if $3a = 4b$, then $4b = 3a$?
- ☑ Symmetric Property of Equality
- ◯ Transitive Property of Equality → if $a=b$ & $b=c$, then $a=c$
- ◯ Reflexive Property of Equality → $a=a$
- ◯ Substitution Property of Equality

8) Evaluate $12^2 - 3\left[4\left(\frac{1}{4}\right) - \left(1^8\right)\right]$.

____144____

9) Which equation represents this sentence?

Four times the sum of a number x and a number y is equal to 20.
- ☑ $4(x + y) = 20$
- ◯ $4xy = 20$
- ◯ $4x + y = 20$
- ◯ $4 + x + y = 20$

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10) Solve $21 = 3p - 6$.

- ⊘ 5
- ☑ 9
- ○ 24
- ○ 13

11) Solve $4(x + 9) = 6x - 4$.

- ○ 3.2
- ○ 6.5
- ☑ 20
- ○ 16

12) Match each equation with the term that describes it.

$10 - m = m - 10$ _One_   one solution

$7x + 5 = 7(x + 5)$ _No_   no solution

$3(t + 2) = (2 + 3t) + 4$ _identity (All)_   identity

13) Solve $\frac{x+15}{10} = \frac{2}{5}$.

- ○ −13
- ○ 1
- ☑ −11
- ○ 19

14) Solve the equation $\frac{2x + 12}{5} = 4y$ for x.

- ○ $x = 20y - 12$
- ☑ $x = 10y - 6$
- ○ $x = 10y - 12$
- ○ $x = \frac{1}{10}y + \frac{3}{5}$

15) BASKETBALL The standard width of a high school basketball court is 50 feet. If 1 meter = 3.3 feet, what is the width of the basketball court in meters? Round to the nearest tenth, if necessary.

_15.2_ meters

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16) What is the range of the relation shown in the graph?
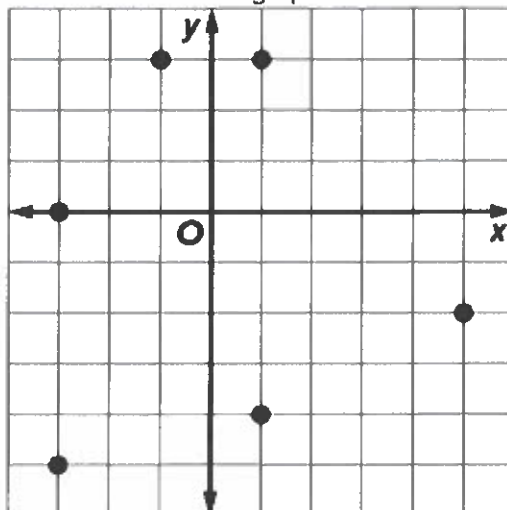
- ○ $\{1, 5\}$
- ○ $\{-3, -1, 1, 5\}$
- ⊘ $\{-5, -4, -2, 0, 3\}$
- ○ $\{-5, -4, -3, -2, -1, 0, 1, 3, 5\}$

17) Fill in the blanks using the available answer choices.

CONSTRUCTION In a relation involving the cost of building a home, the greater the number of square feet of a home, the greater the cost.

The ____*independent*____ variable is the number of square feet.
(Blank 1)

The ____*dependent*____ variable is the cost of building a home.
(Blank 2)

Blank 1 options
- dependent
- independent

Blank 2 options
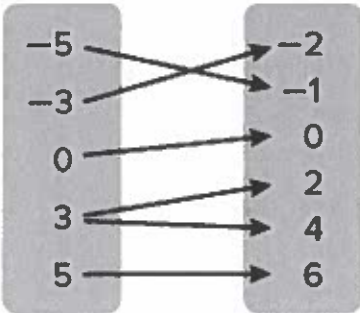- dependent
- independent

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18) Determine whether each relation is a function. Then drag the letter corresponding to each function to the *Function* box or the *Not a Function* box.
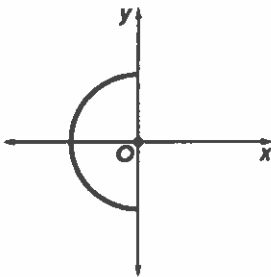
A.

x	y
−2	4
0	0
1	3
−2	1

Domain   Range

B.

C.

D. {(1, 15), (2, 30), (3, 45), (4, 60)}

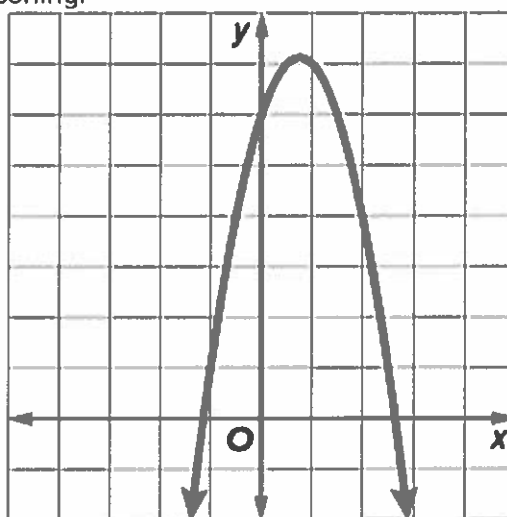| Function	Not a Function
D.	A. B. C.

Answer Bank
A   B   C   D

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19) For $f(x) = -\frac{3x}{5} + 1$, $f(-20) = $ ___13___.

20) For $f(x) = -2x + 5$, find the value of $f(-1) + f(4)$.

○ −4

○ −1

○ 1

☑ 4

21) The graph of $f(x) = -2x^2 + 3x + 6$ is shown. Does $f(x) = -2x^2 + 3x + 6$ represent a function? Explain your reasoning.

○ No; it fails the vertical line test.

○ Yes; the domain and range both include negative numbers.

○ No; the line crosses the axes in three points.

☑ Yes; for each element of the domain, there is only one element of the range.

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22) Fill in the blanks using the available answer choices.

Determine whether each situation represents a *discrete* or *continuous* function.

A. The function $y = 8 + 3.5x$ represents the cost y in dollars to rent a canoe for x whole-number hours.

_____discrete_____
(Blank 1)

B. The function $y = 7.5x$ represents the cost in dollars y for x whole bags of onions

_____discrete_____
(Blank 2)

C. The function $y = 2.54x$ converts length from x inches to y centimeters.

_____continuous_____
(Blank 3)

D. The function $y = 30x - 2$ represents the amount of water y in gallons in a leaking tank after x

_____continuous_____
(Blank 4)

Blank 1 options	Blank 2 options	Blank 3 options	Blank 4 options
• continuous	• continuous	• continuous	• continuous
• discrete	• discrete	• discrete	• discrete

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23) Use the graph to estimate the x- and y-intercepts of this function and describe where the function is positive and negative.
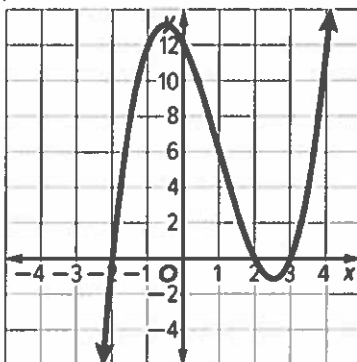

○ x-intercepts: $(2,\ 0),\ (3,\ 0)$;
y-intercept: $(0,\ 12)$;
positive: when $-2 < x < 2$ and when $x > 3$;
negative: when $x <\ -2$ and when $2 < x < 3$

☑ x-intercepts: $(2,\ 0),\ (3,\ 0),\ (-2,\ 0)$;
y-intercept: $(0,\ 12)$;
positive: when $-2 < x < 2$ and when $x > 3$;
negative: when $x < -2$ and when $2 < x < 3$

○ x-intercept: $(0,\ 12)$;
y-intercepts: $(2,\ 0),\ (3,\ 0),\ \text{and}\ (-2,\ 0)$;
positive: when $-2 < x < 2$ and when $x > 3$;
negative: when $x < -2$ and when $2 < x < 3$

○ x-intercepts: $(2,\ 0),\ (3,\ 0),\ (-2,\ 0)$;
y-intercept: $(0,\ 12)$;
positive: when $x < -2$ and when $2 < x < 3$;
negative: when $-2 < x < 2$ and when $x > 3$

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24) Fill in the blanks using the available answer choices.

The graph of a function is shown.
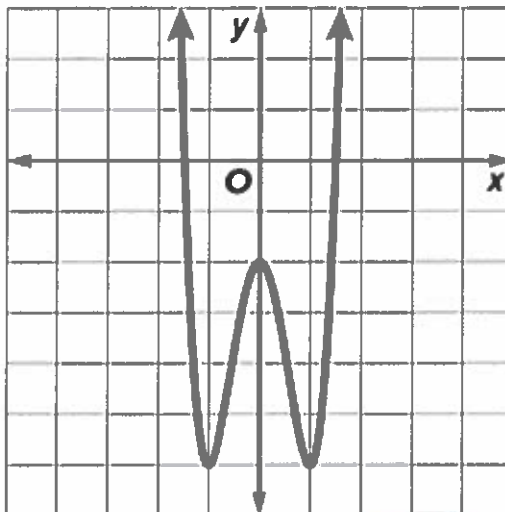
The graph ___*does*___ represent a function. It is ___*nonlinear*___. It is a
(Blank 1)   (Blank 2)

___*continuous*___ graph that is symmetric in the line $x =$ ___*0*___ .
(Blank 3)   (Blank 4)

Blank 1 options
- does
- does not
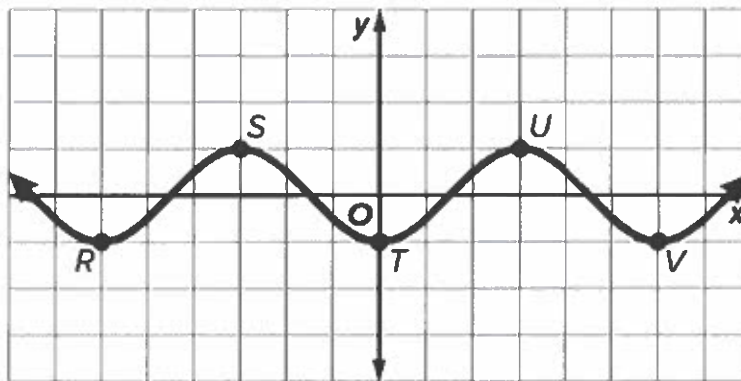
Blank 2 options
- linear
- nonlinear

Blank 3 options
- continuous
- discrete
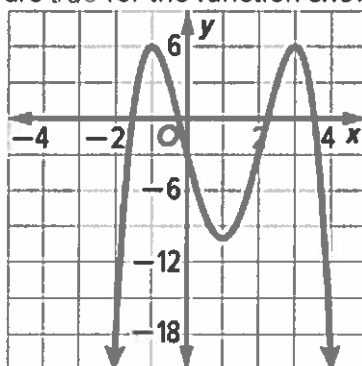
Blank 4 options
- −1
- 0
- 1

25) Select all of the points that are relative minima of the function shown.

☑ R
☐ S
☑ T
☐ U
☑ V

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26) Select all of the statements that are *true* for the function shown.

☑ The function is symmetric about the graph of $x = 1$.

☐ The function is symmetric about the graphs of $x = -1$ and $x = 3$.

☐ This function has exactly two zeros.

☑ End behavior: As x increases, y decreases.

☐ End behavior: As x decreases, y increases.

☑ The function is positive between approximately –1.5 and –0.25 and between approximately 2.25 and 3.5.

☐ The function is negative for values less than approximately –1.5 and greater than approximately 3.5.

☐ The function is negative for values less than approximately 2.25 and greater than approximately -0.25.

☑ There are relative maximums at both $(-1, \ 6)$ and $(3, \ 6)$.

☐ There is a relative minimum at $(0, \ -3)$.