

DO NOW

1) John has four more nickels than dimes in his pocket, for a total of \$1.25. Which equation could be used to determine the number of dimes, x , in his pocket?

(1) $0.10(x + 4) + 0.05(x) = \1.25

(2) $0.05(x + 4) + 0.10(x) = \1.25

(3) ~~$0.10(4x) + 0.05(x) = \$1.25$~~

(4) ~~$0.05(4x) + 0.10(x) = \$1.25$~~

2) A sunflower is 3 inches tall at week 0 and grows 2 inches each week. Which function(s) shown below can be used to determine the height, $f(n)$, of the sunflower in n weeks?

I. $f(n) = 2n + 3$

II. $f(n) = 2n + 3(n - 1)$

III. $f(n) = f(n - 1) + 2$ where $f(0) = 3$

(1) I and II

(2) II, only

(3) III, only

(4) I and III

Explicit

Recursive

the value of the previous term

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Homework Answers

1) 1 7) 1 13) 3 19) 1

2) 3 8) 2 14) 3 20) 2

3) 4 9) 3 15) 4 21) 3

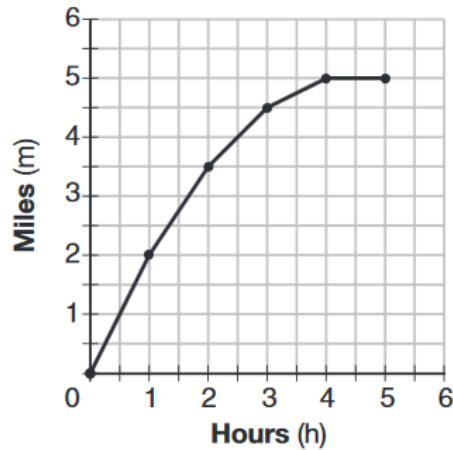
4) 4 10) 1 16) 3 22) 4

5) 2 11) 4 17) 1 23) 1

6) 2 12) 3 18) 1 24) 2

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1 The graph below shows the distance in miles, m , hiked from a camp in h hours.



Which hourly interval had the greatest rate of change?

- (1) hour 0 to hour 1
- (2) hour 1 to hour 2
- (3) hour 2 to hour 3
- (4) hour 3 to hour 4

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2 The solution of an equation with two variables, x and y , is

- (1) the set of all x values that make $y = 0$
- (2) the set of all y values that make $x = 0$
- (3) the set of all ordered pairs, (x,y) , that make the equation true
- (4) the set of all ordered pairs, (x,y) , where the graph of the equation crosses the y -axis

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3 Which statistic can *not* be determined from a box plot representing the scores on a math test in Mrs. DeRidder's algebra class?

- (1) the lowest score
- (2) the median score
- (3) the highest score
- (4) the score that occurs most frequently

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4 Which chart could represent the function $f(x) = -2x + 6$?

| x | f(x) |
|---|------|
| 0 | 6 |
| 2 | 10 |
| 4 | 14 |
| 6 | 18 |

(1)

| x | f(x) |
|---|------|
| 0 | 8 |
| 2 | 10 |
| 4 | 12 |
| 6 | 14 |

(3)

| x | f(x) |
|---|------|
| 0 | 4 |
| 2 | 6 |
| 4 | 8 |
| 6 | 10 |

(2)

| x | f(x) |
|---|------|
| 0 | 6 |
| 2 | 2 |
| 4 | -2 |
| 6 | -6 |

(4)

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5 If $f(n) = (n - 1)^2 + 3n$, which statement is true?

- (1) $f(3) = -2$ (3) $f(-2) = -15$
(2) $f(-2) = 3$ (4) $f(-15) = -2$

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6 The table below shows 6 students' overall averages and their averages in their math class.

| | | | | | | |
|--------------------------------|----|----|----|----|----|----|
| Overall Student Average | 92 | 98 | 84 | 80 | 75 | 82 |
| Math Class Average | 91 | 95 | 85 | 85 | 75 | 78 |

If a linear model is applied to these data, which statement best describes the correlation coefficient?

- (1) It is close to -1 . (3) It is close to 0.
(2) It is close to 1. (4) It is close to 0.5.

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7 What is the solution to $2h + 8 > 3h - 6$?

(1) $h < 14$

(3) $h > 14$

(2) $h < \frac{14}{5}$

(4) $h > \frac{14}{5}$

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8 Which expression is equivalent to $36x^2 - 100$?

(1) $4(3x - 5)(3x - 5)$

(3) $2(9x - 25)(9x - 25)$

(2) $4(3x + 5)(3x - 5)$

(4) $2(9x + 25)(9x - 25)$

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- 9 Patricia is trying to compare the average rainfall of New York to that of Arizona. A comparison between these two states for the months of July through September would be best measured in
- (1) feet per hour (3) inches per month
(2) inches per hour (4) feet per month

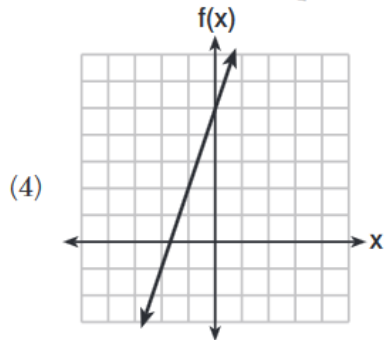
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- 10 Which function defines the sequence $-6, -10, -14, -18, \dots$, where $f(6) = -26$?
- (1) $f(x) = -4x - 2$ (3) $f(x) = -x + 32$
(2) $f(x) = 4x - 2$ (4) $f(x) = x - 26$

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11 Which function has the greatest y -intercept?

- (1) $f(x) = 3x$
- (2) $2x + 3y = 12$
- (3) the line that has a slope of 2 and passes through $(1, -4)$



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12 What is the product of $2x + 3$ and $4x^2 - 5x + 6$?

- (1) $8x^3 - 2x^2 + 3x + 18$
- (2) $8x^3 - 2x^2 - 3x + 18$
- (3) $8x^3 + 2x^2 - 3x + 18$
- (4) $8x^3 + 2x^2 + 3x + 18$

$$(2x + 3)(4x^2 - 5x + 6)$$

| | | | |
|------|---------|----------|-------|
| | $4x^2$ | $-5x$ | $+6$ |
| $2x$ | $8x^3$ | $-10x^2$ | $12x$ |
| $+3$ | $12x^2$ | $-15x$ | 18 |

$$8x^3 + 2x^2 - 3x + 18$$

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13 The height of a rocket, at selected times, is shown in the table below.

| | | | | | | | | |
|-------------|-----|-----|-----|-----|-----|-----|-----|----|
| Time (sec) | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Height (ft) | 180 | 260 | 308 | 324 | 308 | 260 | 180 | 68 |

Based on these data, which statement is *not* a valid conclusion?

- ~~(1) The rocket was launched from a height of 180 feet.~~
- ~~(2) The maximum height of the rocket occurred 3 seconds after launch.~~
- (3) The rocket was in the air approximately 6 seconds before hitting the ground.
- (4) The rocket was above 300 feet for approximately 2 seconds.

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14 A parking garage charges a base rate of \$3.50 for up to 2 hours, and an hourly rate for each additional hour. The sign below gives the prices for up to 5 hours of parking.

| Parking Rates | |
|---------------|---------|
| 2 hours | \$3.50 |
| 3 hours | \$9.00 |
| 4 hours | \$14.50 |
| 5 hours | \$20.00 |

5.50
hourly rate

Which linear equation can be used to find x , the additional hourly parking rate?

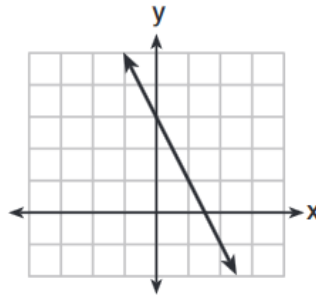
- (1) $9.00 + 3x = 20.00$
- (2) $9.00 + 3.50x = 20.00$
- (3) $2x + 3.50 = 14.50$
- (4) $2x + 9.00 = 14.50$

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15 Which function has a constant rate of change equal to -3 ?

| x | y |
|---|----|
| 0 | 2 |
| 1 | 5 |
| 2 | 8 |
| 3 | 11 |

(1)



(3)

$\{(1,5), (2,2), (3,-5), (4,4)\}$

(2)

$$2y = -6x + 10$$

(4)

Jun 2-6:56 AM

16 Kendal bought x boxes of cookies to bring to a party. Each box contains 12 cookies. She decides to keep two boxes for herself. She brings 60 cookies to the party. Which equation can be used to find the number of boxes, x , Kendal bought?

(1) $2x - 12 = 60$

(3) $12x - 24 = 60$

(2) $12x - 2 = 60$

(4) $24 - 12x = 60$

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17 The table below shows the temperature, $T(m)$, of a cup of hot chocolate that is allowed to chill over several minutes, m .

| | | | | | | |
|--------------------------|-----|-----|----|----|----|----|
| Time, m (minutes) | 0 | 2 | 4 | 6 | 8 | L1 |
| Temperature, $T(m)$ (°F) | 150 | 108 | 78 | 56 | 41 | L2 |

Which expression best fits the data for $T(m)$?

- (1) $150(0.85)^m$
- (2) $150(1.15)^m$
- (3) $150(0.85)^{m-1}$
- (4) $150(1.15)^{m-1}$

Option D
Exponential
Reg

$a = 150$
 $b = .85$

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18 As x increases beyond 25, which function will have the largest value?

- (1) $f(x) = 1.5^x$
- (2) $g(x) = 1.5x + 3$
- (3) $h(x) = 1.5x^2$
- (4) $k(x) = 1.5x^3 + 1.5x^2$

Jun 2-6:56 AM

19 What are the solutions to the equation $3x^2 + 10x = 8$?

(1) $\frac{2}{3}$ and -4

(3) $\frac{4}{3}$ and -2

(2) $-\frac{2}{3}$ and 4

(4) $-\frac{4}{3}$ and 2

$$3x^2 + 10x - 8 = 0$$

$$3x^2 + 12x - 2x - 8 = 0$$

$$3x(x+4) - 2(x+4) = 0$$

$$(3x-2)(x+4) = 0$$

$$3x-2=0 \quad x+4=0$$

$$x=\frac{2}{3} \quad x=-4$$

| | |
|-------------|--------------|
| -24 | 10 |
| $12 \div 2$ | $12 \div -2$ |

Jun 2-9:31 AM

20 An online company lets you download songs for \$0.99 each after you have paid a \$5 membership fee. Which domain would be most appropriate to calculate the cost to download songs?

(1) rational numbers greater than zero

(2) whole numbers greater than or equal to one

(3) integers less than or equal to zero

(4) whole numbers less than or equal to one

$y = .99x + 5$

x - values # of songs

y - cost

Jun 2-9:31 AM

21 The function $f(x) = 3x^2 + 12x + 11$ can be written in vertex form as

(1) $f(x) = (3x + 6)^2 - 25$

(3) $f(x) = 3(x + 2)^2 - 1$

~~(2) $f(x) = 3(x + 6)^2 - 25$~~

(4) $f(x) = 3(x + 2)^2 + 7$

$(x+6)^2$
 $(x+6)(x+6)$
 $3(x^2 + 12x + 36)$
 $3x^2 +$

$(x+2)^2$
 $(x+2)(x+2)$
 $3(x^2 + 4x + 4)$

$3(x^2 + 4x + \frac{11}{3})$ $3x^2 + 12x + 12$
 $3(x^2 + 4x + _ + \frac{11}{3} - _)$

Jun 2-9:32 AM

22 A system of equations is given below.

$x + 2y = 5$
 $2x + y = 4$ $4x + 2y = 8$

Which system of equations does *not* have the same solution?

(1) $3x + 6y = 15$
 $2x + y = 4$

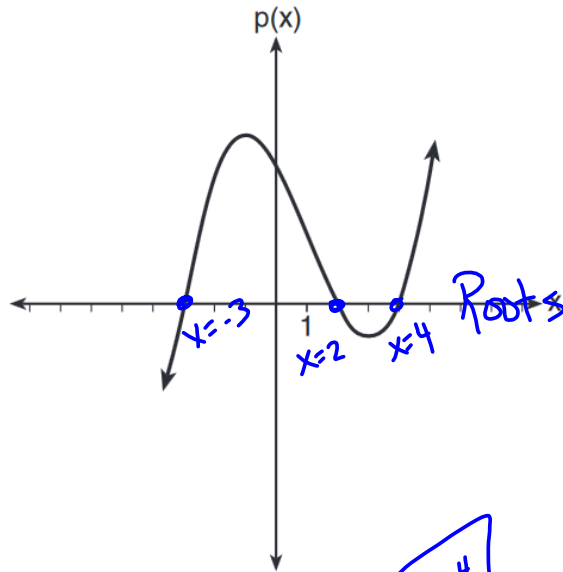
(3) $x + 2y = 5$
 $6x + 3y = 12$

(2) $4x + 8y = 20$
 $2x + y = 4$

(4) $x + 2y = 5$
 $4x + 2y = 12$

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23 Based on the graph below, which expression is a possible factorization of $p(x)$?



- (1) $(x + 3)(x - 2)(x - 4)$
- (2) $(x - 3)(x + 2)(x + 4)$
- (3) $(x + 3)(x - 5)(x - 2)(x - 4)$
- (4) $(x - 3)(x + 5)(x + 2)(x + 4)$

$x = 4$

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24 Milton has his money invested in a stock portfolio. The value, $v(x)$, of his portfolio can be modeled with the function $v(x) = 30,000(0.78)^x$, where x is the number of years since he made his investment. Which statement describes the rate of change of the value of his portfolio?

- (1) It decreases 78% per year.
- (2) It decreases 22% per year.
- (3) It increases 78% per year.
- (4) It increases 22% per year.

Decay

$$a(1-r)^t$$

$$1-r = .78$$

$$\frac{-r}{-1} = \frac{-.22}{-1}$$

$r = .22$

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