

Algebra 2 SAT Prep 2 Worksheet 2

1. Of the solutions for $3x^3 + 4x^2 - 5x = 0$, which has the greatest value?

- A. 0
- B. $\frac{-2+\sqrt{19}}{3}$ *pos*
- C. $\frac{-2-\sqrt{19}}{3}$ *neg*
- D. $\frac{-2+2\sqrt{19}}{3}$ *pos but not a solution*

Answer the following:

- A D
- B B
- C B
- D A

2. If square ABCD has area 25, and the area of the larger shaded square is 9 times the area of the smaller shaded square, what is the length of one side of the smaller shaded square?

Note: Figure not drawn to scale

$25 = 4x \cdot 4x$
 $25 = 16x^2$
 $\sqrt{25} = \sqrt{16x^2}$
 $5 = 4x$
 $x = \frac{5}{4}$

Answer the following:

- A 5/3
- B 5/4
- C 6/5
- D 5/3

3. Solution X is 10 percent alcohol by volume, and solution Y is 30 percent alcohol by volume. How many milliliters of solution Y must be added to 200 milliliters of solution X to create a solution that is 25 percent alcohol by volume?

Answer the following:

$0.10x + 0.30y = 0.25(x+y)$
 $0.10(200) + 0.30y = 0.25(200+y)$
 $20 + 0.30y = 50 + 0.25y$
 $0.05y = 30$
 $y = 600$

Answer the following:

- A 480
- B 500
- C 600
- D 480

4. A computer can perform n calculations in k seconds. How long will it take the computer to perform k calculations?

Answer the following:

$\frac{60c}{5 \text{ sec}} = \frac{60c}{1 \text{ min}} = \frac{60c}{5 \text{ minutes}}$
 $\frac{60c}{5} = \frac{k}{x} \rightarrow \frac{60c}{5} = \frac{kx}{60c}$
 $x = \frac{kx}{60c}$

Answer the following:

- A 60c/ks
- B ks/c
- C kks/c
- D ks/60c

5. Which of the following is equivalent to $(\frac{1}{\sqrt{x}})^n$?

Answer the following:

A) $x^{\frac{n}{2}}$
 B) $x^{-\frac{n}{2}}$
 C) $x^{n+\frac{1}{2}}$
 D) $x^{n-\frac{1}{2}}$

$(\frac{1}{x^{1/2}})^n = (x^{-1/2})^n = x^{-1/2 \cdot n}$

Answer the following:

- A C
- B B
- C D
- D A

10. What are the solutions x of the given equation?

Answer the following:

A) $\{-5, 20\}$ *plug 5 in*
 B) $\{5, 20\}$ *and plug 20 in*
 C) 5

$(x-12)(x-12) = x+44$
 $x^2 - 24x + 144 = x + 44$
 $x^2 - 25x + 100 = 0$
 $(x-20)(x-5) = 0$
 $x = 20$ ~~$x = 5$~~

just plug each in
 check 5 doesn't work for extraneous

5. If the circle with center O has area 9π , what is area of equilateral triangle ABC?

$A = \pi r^2$
 $9\pi = \pi r^2$
 $9 = r^2$
 $3 = r$

$\frac{12 \cdot \sqrt{3}}{3} = 4\sqrt{3}$

Answer the following:

- A 12
- B 12√6
- C 36
- D 36

6. Define f and g as follows:

$f(x) = \begin{cases} x+2, & x < 0 \\ 4-x, & x \geq 0 \end{cases}$

$g(x) = \begin{cases} 4x, & x < 3 \\ 3x, & x \geq 3 \end{cases}$

Evaluate $(f \circ g)(3)$.

Answer the following:

- A 14
- B 14
- C -8
- D 11

7. In the equation above, b is a constant. If the equation is true for all values of x , what is the value of b ?

$(x^2 + bx - 2)(x + 3) = x^3 + 6x^2 + 7x - 6$

Answer the following:

$x^3 + 3x^2 + bx^2 + 3bx - 2x - 6 = x^3 + 6x^2 + 7x - 6$
 $6x^2 + 7x$

Answer the following:

- A 7
- B 3
- C 9
- D 6

8. In the polynomial above, c is a constant. If the polynomial is divisible by $y - 2$, what is the value of c ?

$y^3 - 2y^2 - cy + 6x$

Answer the following:

- A can't be determined.
- B -12
- C -12
- D -12

Algebra 2 SAT practice #3

Header:

1. The art club has a budget of \$350 for art supplies. The club has already purchased a display board for \$125 and would like to buy several canvases. The canvases are \$15 each. How many canvases can the club buy? Let x represent the number of canvases. Which inequality can be used to find x ?

- A $350 > 125 - 15x$ B $350 < 125 + 15x$
 C $350 \geq 125 + 15x$ D $350 \leq 125 - 15x$

2. Given the table, determine the equation of the function.
- | x | -2 | -1 | 0 | 1 | 2 |
|------|------|----|---|---|----|
| f(x) | 0.25 | 1 | 4 | 9 | 16 |

- A $y = 4(1/4)^x$ B $y = 2(x-1)^2 + 16$
 C $y = 4(4)^x$ D $y = 4(x-0)^2 + 4$

3. Write the function rule to represent the table.
- | x | 0 | 1 | 2 | 3 | 4 |
|------|---|----|----|----|----|
| f(x) | 3 | 10 | 17 | 24 | 31 |

- A $y = 7x + 3$ B $y = 3(7)^x$
 C Not a function D $y = 7(3)^x$

7. Solve the system of equations by elimination.

$-x + y = -13$
 $8x - 4y = -8$

A $(5, 8)$ B $(5, -8)$
 C $(5, 8)$ D $(-5, -8)$

$-(5) + 8 = -13$
 $8(5) - 4(8) = -8$

10. What is the probability that the person picked will be a boy given they speak German?

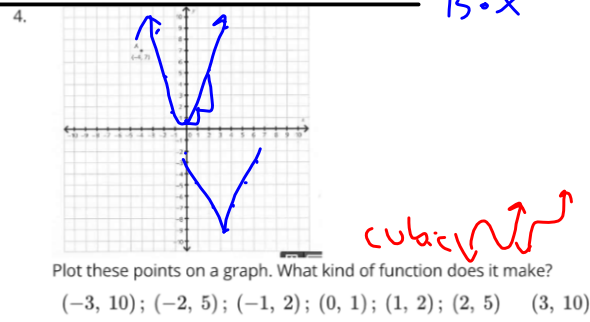
	Spanish	French	German	Total
Boys	10	2	8	20
Girls	15	12	3	30
Total	25	14	11	50

- A .16 B .4
 C .22 D .7273

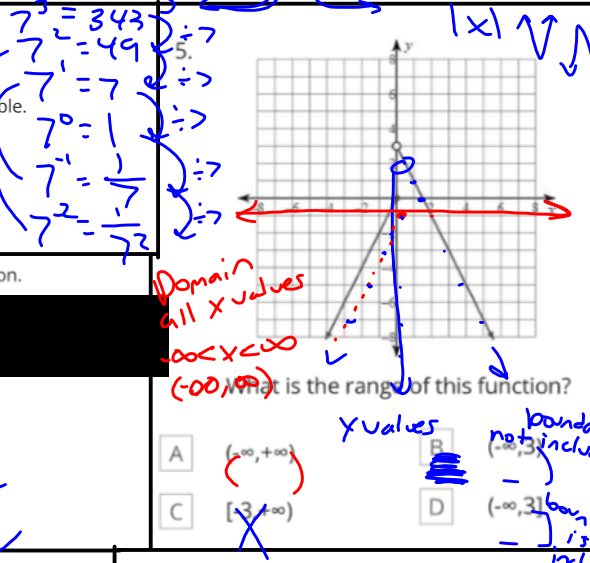
13. Last month, Kyeisha made \$480 working for 30 hours. This month, she will get a 15% increase in the amount she earns per hour. What will be her hourly rate, in dollars per hour, after the raise?

A \$15.00 B \$2.40
 C \$480 D \$18.40

$480 / 30 = 16$
 $15\% = 0.15$
 $16 \cdot 0.15 = 2.40$
 $16 + 2.40 = 18.40$



- A Linear B Quadratic
 C Exponential

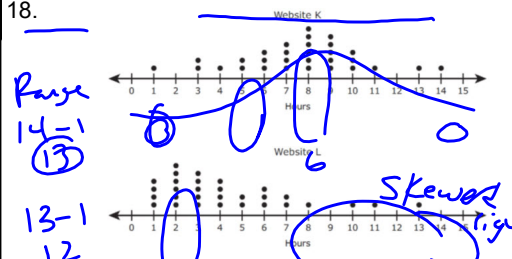


12. Mario had 102 dollars to spend on 9 books. After buying them he had 21 dollars. How much did each book cost?

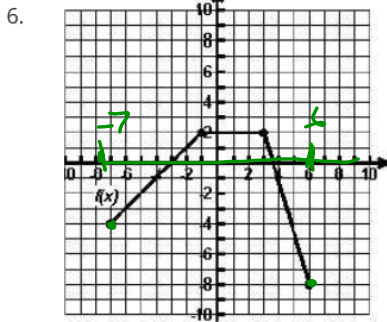
A \$11 B \$10
 C \$9 D \$8

$102 - 21 = 81$
 $81 / 9 = 9$

The dot plots below show the numbers of hours teenagers spent on two different websites last week.



- F. The mode of the data for Website K is greater than the mode of the data for Website L.
 G. The range of the data for Website L is equal to the range of the data for Website K.
 H. The distribution of data for Website L is symmetrical.
 J. The distribution of data for Website K is skewed to the left.



What is the DOMAIN of the function?

- A [-7, 6] B (-7, 6)
 C [-8, 2] D [-7, -8]

15. Josh is thinking of two numbers. Their sum is -10 and their difference is -2. Which system of equations represents the situation?

- A $x = -2$
 $y = 5$ B $x + y = -2$
 $x - y = -10$
 C $x - y = -10$
 $x + y = -2$ D $x + y = -10$
 $x - y = -2$

8. Alexandra finds that she can give 3 haircuts and 2 hair dyes in 315 minutes. Giving 2 haircuts and 4 hair dyes takes 450 minutes. Which system of equations represents the situation?

- A $3x + 2y = 450$
 $2x + 4y = 315$ B $2x + 2y = 315$
 $3x + 4y = 450$
 C $3x + 2y = 315$ ✓
 $2x + 4y = 450$ ✓

9. When you are trying to find the MEDIAN of a set of data and 2 numbers are left in the middle after putting them in order from least to greatest, what do you do?

- A Subtract the 2 numbers B Pick the one you want
 C Add the 2 numbers and divide by 2 D List both numbers as the median

11. Bag A contains 9 red marbles and 3 green marbles. Bag B contains 9 black marbles and 6 orange marbles. Find the probability of selecting one green marble from bag A and one black marble from bag B.

- A $2/27$ C $3/20$
 B $3/15$ D $1/4$

multiply Probabilities
Or add

17. A dolphin jumps from the water at an initial velocity of 16 feet per second. The equation $h = -16t^2 + 80t$ models the dolphin's height at any given time, t . What is the maximum height the dolphin jumps?

- A 1 foot B 96 feet
 C 5 feet D 100 feet

$a = -16$
 $x = \frac{-b}{2a} = \frac{-80}{2(-16)} = \frac{-80}{-32} = 2.5$
 $-16(2.5)^2 + 80(2.5)$
 100

16. The height of an object thrown into the air can be modeled by the formula $y = -16x^2 + 70x + 95$, where y is in feet after x seconds. What is the height of the object after 5 seconds?

- A 171.56 feet B 45 feet
 C 95 feet D 70 feet

$f(x) = 2x^2 - 5x$
 $2(x-2)^2 - 5(x-2)$
 $2(x^2 - 4x + 4) - 5x + 10$
 $2x^2 - 8x + 8 - 5x + 10$
 $2x^2 - 13x + 18$

19.

- A $2x^2 - 13x + 18$
 B $2x^2 - 8x + 3$
 C $2x^2 - 13x + 18$ D $2x^2 - 5x + 18$

20. Given that $f(x) = x^2 + x$ and $g(x) = 3x + 1$, find the value of $f(g(4))$.

- A 61 B None of the Above
 C 40 D 182

14. The ratio of cups of sugar to cups of flour needed to bake cookies is 1:5. If Myesha uses 25 cups of flour, how much sugar is needed?

- A 125 cups B 10 cups
 C 5 cups D 15 cups

$\frac{1}{5} = \frac{x}{25}$
 $5x = 25$
 $x = 5$