Algebra 2 SAT Prep Wkst 1

1. $\frac{5x}{6y} \cdot \frac{3}{10y}$

Which expression is equivalent to the above product for all $y \neq 0$?

(5x/6y)(3/10y) When multiplying fractions, multiply straight across

$\frac{15x}{60y^2} \div 15 \quad \frac{1x}{4y^2}$

A x/2
B (25x)/9
C x/(2y^2)
D x/(4y^2)

2. What is the sum of 3b(b-4) and 6(b-8)?

add

3b(b-4) + 6(b-8) distribute

$3b^2 - 12b + 6b - 48$ add + combine like terms

$3b^2 - 6b - 48$

$3(b^2 - 2b - 16)$ Factor by dividing out common factor and put outside parentheses like undoing distribution

A 3b(1-2b-16)
B 3b(b-2-16)
C 3(b^2-2b-16)
D 3(b^2-2-16b)

3. What is the following expression in terms of c? $(3c - 4c^2 + c^3) - (5c^2 - 8c^3 + 6c)$

$3c - 4c^2 + c^3 - 5c^2 - 8c^3 + 6c$ distribute subtraction

$-7c^3 - 9c^2 + 9c$ watch for sign changes

A 7c^3+9c^2-3c
B 7c^3+c^2-3c
C -7c^3+c^2+9c
D -7c^3-9c^2+9c

4. $P(x) = 2x^3 - 18x$

Factor out GCF $2x(x^2 - 9)$ → factor difference of squares $2x(x-3)(x+3)$

$2x = 0 \quad x - 3 = 0 \quad x + 3 = 0$ Factor and set each factor = 0

Given the polynomial function defined above, what are its zeros?

$x = 0 \quad x = 3$ and $x = -3$

A -9, -6, 2, 3
B -9, 0, 2
C -3, 3
D -3, 0, 3

25. If g(x) = 2x + 1 and f(x) = g(x) + 4, what is f(2)?

means $x = 2$ plug 2 in for x

So first plug 2 in for x for g(x) then plug what you got in for g(x)

$f(2) = g(2) + 4$

$f(2) = [2(2)+1] + 4$

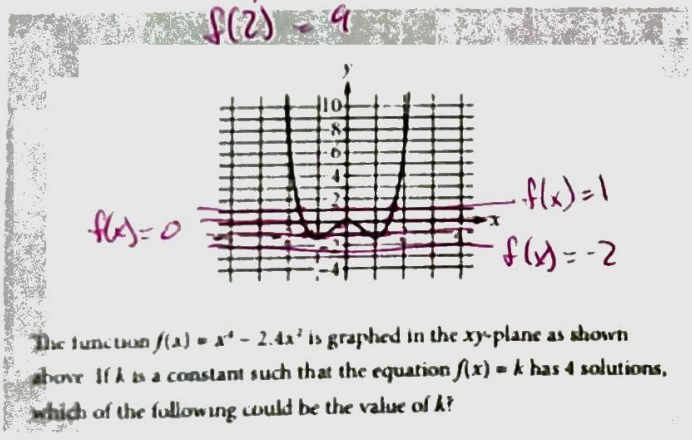
$= [4+1] + 4$

$f(2) = 5 + 4$

$f(2) = 9$

A 5
B 6
C 9
D 11

26.



The function $f(x) = x^4 - 2.4x^2$ is graphed in the xy-plane as shown above. If k is a constant such that the equation $f(x) = k$ has 4 solutions, which of the following could be the value of k?

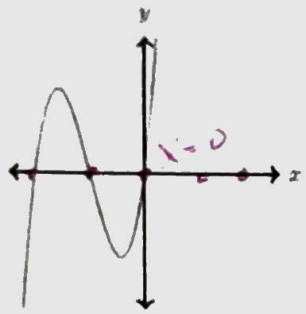
f(x)=k is a horizontal line

Must cross function 4 times to have 4 solutions

A -2 doesn't cross any times 0 solutions
B -1 Crosses 4 times
C 0 Crosses 3 times there is a bounce at (0,0) x=0
D 1 Crosses 2 times so 2 solutions

Algebra 2 Test SAT Practice Test **Header:**

5.



Which of the following functions could represent the graph in the x, y-plane, where $y=P(x)$?

3 solution so must be x^3 not x^2 Factor out x and factor quadratic

x^3+6x^2+8x | x^3-6x^2+8x

$x(x^2+6x+8)$ | $x(x^2-6x+8)$

$x(x+4)(x+2)$ | $x(x-4)(x-2)$

$x=0$ $x+4=0$ $x+2=0$ | $x=0$ $x-4=0$ $x=4$ $x-2=0$ $x=2$

$x=-4$ $x=-2$

A $P(x)=x^2+6x+8$ would look like ∪ or ∩

B $P(x)=x^3+6x^2+8x$ ★ graph on graphing calculator

C $P(x)=x^2-6x+8$

D $P(x)=x^3-6x^2+8x$

6. A polynomial has zeros at -9, 2, and 0. Which of the following could be the polynomial?

A $x2-7x-18$ ✗ can't be there are 3 zeros so degree should be 3

B x^3+7x^2-18x

C $x^3+8x^2-11x-18$

D $x^3+6x^2-25x+18$

$x=-9$ $x=2$ $x=0$

$+9$ $+9$ -2 -2

$x+9=0$ $x-2=0$ $x=0$

$x=0$ is a zero so all terms would have x

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

$x(x^2+7x-18)$

x^3+7x^2-18x

7. Let $g(x)=8x-5$. Which of the following is equivalent to $g(g(x))$?

$g(g(x))$ is a composition it means Put the whole function $g(x)$ in for the x of the outer function $g(x)$ the function completely replaces x

$g(g(x))$

$g(8x-5)$

$8(8x-5)-5$

$64x-40-5$

A $64x-10$

B $64x-45$

C $64x^2+25$

D $64x^2-80x+25$

8. $C = 1.2272M + 3.0556F$

An English teacher uses the equation above to give the composite score, C, on the final exam, given M correct multiple choice answers and F points on the free response questions. Which of the following equations correctly gives the number of correct multiple choice answers in terms of the composite score and the number of points on the free response questions? Solve for M

$C = 1.2272M + 3.0556F$

$-3.0556F$ $-3.0556F$

$\frac{C-3.0556F}{1.2272} = \frac{1.2272M}{1.2272}$

$= M$

A $M = (C - 3.0556F)/1.2272$

B $M = (C/1.2272) - 3.0556F$

C $M = (3.0556F - C)/1.2272$

D $M = (3.0556F/1.22722) - C$

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Header:

9. $(a+b+c)^2$

Which of the following is equivalent to the above expression?

(A) $a^2+b^2+c^2+2(ab+bc+ca)$ (B) $a^2+b^2+c^2$

(C) $a^2+2abc+c^2$ (D) $a^2+2ab+b^2+2bc+c^2$

$(a+b+c)(a+b+c)$

$a(a+b+c)+b(a+b+c)+c(a+b+c)$

$a^2+ab+ac+ba+b^2+bc+ca+cb+c^2$

$a^2+2ab+2bc+2ca+b^2+c^2$

all have 2 so factor it out

$a^2+b^2+c^2+2(ab+bc+ca)$

10. Which of the following represents all solutions (x,y) to the system of equations shown below?

$y = x - 2$

$y = x^2 - x - 5$

you could graph both functions and see where they cross or substitute and solve for x

$x-2 = x^2-x-5$

$-x+2 \quad -x+2$

$0 = x^2-2x-3$

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

$x-3=0 \quad x+1=0$

$x=3 \quad x=-1$

$y=(3)-2=1 \quad y=(-1)-2=-3$

(A) (3, -1) (B) (-3, 1)

(C) (-3, -5) and (1, -1) (D) (3, 1) and (-1, -3)

11. $-7x^2 = (y+5)(y-5)$

$5y = 15x \rightarrow y = \frac{15x}{5} = 3x$

$-7x^2 = (3x+5)(3x-5)$

$-7x^2 = 9x^2 - 15x + 15x - 25$

$-7x^2 = 9x^2 - 25$

If (a,b) is a solution to the system of equations shown above and a>0, what is the value of a?

alphabetical order $a=x$ $b=y$

(A) 1/2 (B) 1

(C) 5/4 (D) 3

$0 = 16x^2 - 25$

$0 = (4x-5)(4x+5)$

$4x-5=0 \quad 4x+5=0$

$x = 5/4 \quad x = -5/4$

if $x=1$ then $5y=15$, $y=3$, but $-7(1)^2 \neq (3+5)(3-5)$

values for x

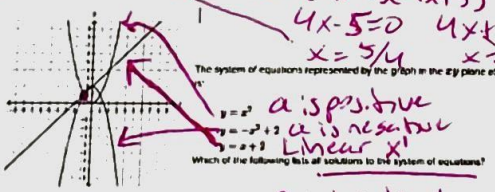
if $x=3$ then $5y=15\cdot3$, $5y=45$, $y=9$

$-7(3)^2 = (9+5)(9-5)$

$-7\cdot9 = (14)(4)$

$-63 = 56$

a is positive $a>0$

12. 

a is pos. shape

a is negative

Linear x'

points that work for all 3 at the same time

(A) (-1, 1) (B) (0, 2)

(C) (0, 2) and (2, 4) only work for 2 at a time (D) (-1, 1), (1, 1), (0, 2) and (2, 4)

13. $(2x-3)(x+4)=0$

Let x=a and x=b be the solutions to the equation above. What is the value of a + b?

separate set =0 and solve

(A) -5/2 (B) -1/2

(C) 5/2 (D) 9.5

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

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

$x=3/2 \quad x=-4$

you need to know what the two solutions are and then add them together

$\frac{3}{2} + -\frac{4}{1}$ (·2)

$\frac{3}{2} - \frac{8}{2}$ (·2)

$\frac{-5}{2}$

To add or subtract fractions get common denominator multiply top + bottom by same # so denominators match

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Header:

14. $R(q) = -0.31(q - [illegible])^2 + 9500$

A shoe manufacturer determines that its monthly revenue $R(q)$ [illegible] … [illegible] maximum value of the company's monthly revenue in dollars?

A 260

B 2945

C 7000

D $9500

15. A factory designs cylindrical cans 10 cm in height to hold exactly 500 cm³ of [illegible] … the following best approximates the radius of these cans?

A 4 cm

C 12.5 cm

16. [illegible] throws a stone vertically upward from a bridge. The height, in meters, of the [illegible] the water at time t can be modeled by the quadratic function

$h(t) = -4.9t^2 - 9.8t + 39.2$

After how many seconds does the stone hit the water?

A 1 second

B 2 seconds

C 4 seconds

D 8 seconds

17. The following function gives the amount of money owed on a short term loan after [illegible]

$A(t) = 100 \cdot (1.25)^{\frac{t}{2}}$

What numerical expression best approximates the annual interest rate, excluding [illegible]
(1 year = 52 weeks)

A $1 - 0.25^{26}$

B $1.25^{26} - 1$

C (26)(1.25)

D (26)(0.25)

18. If $b^3 \cdot (b^4)^2 = b^x$, what is the value of x?

A 9

B 11

C 18

D 14

19. What is the sum of the solutions to the equation below?

$(y - 3) = \sqrt{7y - 31}$

A -13

B -3

C 3

D 13

20. $\sqrt{3p + 13} = (p + 3)$

What is the sum of the solutions to the above equation?

A -3

B 0

C 1

D 2

21. **For what values of x is $f(x) = 2x + 2$ equal to $f(x) = x^2 + x + 2$?**

A -1 and 0

B 0 and 1

C 1 and 2

D 2 and 3

22. If x > 0 and $2x^2 + 3x - 2 = 0$, what is the value of x?

A -2

B 0

C 1/2

D 1

23. What is the sum of the solutions of $(2x - 1)^2 = (x + 2)^2$

A -3

B 0

C 8/3

D 10/3

24. A researcher estimates that the population of a city is declining at .6% the current population of the city is 80,000, which of t[illegible] models the population of the city t years from now ac[illegible]

A $80{,}000(1 - 0.006)^t$

B $80{,}000(1 - 0.006^t)$

C $80{,}000 - 1.006^t$

D $80{,}000(0.006^t)$