

Algebra 2 Exam Review Questions

Score: _____

Directions: These questions reflect material that we have already learned that will be on your final exam. We want you to keep what you have learned current by using these questions as practice. Place your final answer in the space provided if multiple choice, and circle your final answer if open-ended. Attach scratch work to this document. Please turn this assignment in the day we return from the mandatory quarantine.

1. Given the equation $G = TSK^2$, what is K? (ACE.4)

2. Given the table below, write the explicit formula for the sequence. (FBF.2) *Hint: $a_n = a_1 + d(n - 1)$*

X	1	2	3	4	5
y	95	88	81	74	67

2. _____

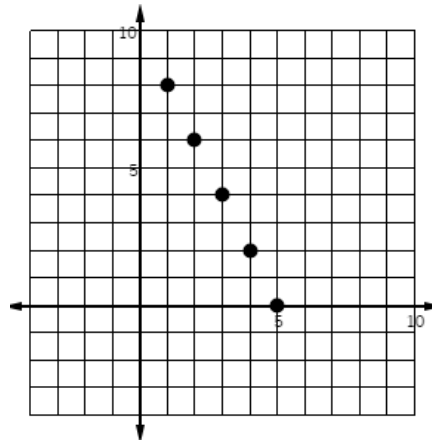
A) $a_n = -7 + 95(n - 1)$

B) $a_n = 95 - 7(n - 1)$

C) $a_n = 95 + 7n$

D) $a_n = 95 - 7n$

3. Given the graph, what is $f(2)$? (FIF.4)



4. What is the 87th term of the sequence 7, 9, 11, 13, ...? (FBF.2) *Hint: $a_n = a_1 + d(n - 1)$*

5. Mable incorrectly concluded that the solution to the inequality $-40 - 2x \geq -50$ was $x \geq 5$. Which statement could be used to justify that Mable's solution is incorrect?

5. _____

A) When Mable divided by -2 , the sign of the answer should have been negative.

B) When Mable divided by -2 , the inequality symbol should have been \leq .

C) When simplifying, Mable should have subtracted 25 from both sides of the inequality.

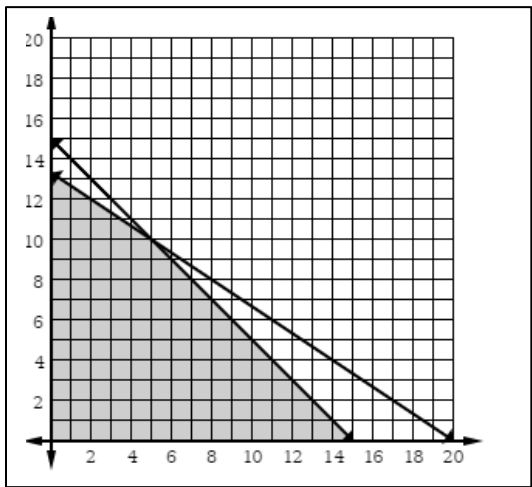
D) When simplifying, Mable should have divided by -40 first, then by -2 .

Refer to the situation below to answer questions #6 – 8.

You want to spend no more than \$40 for at most 15 tomato plants. Roma tomato plants are \$2 each and yield 8lbs per plant and the Cherry tomato plants are \$3 each and yield 10 lbs per plant. You want to maximize the pounds of tomatoes you will get. How many of each plant should you buy? Let x = number of Roma tomato plants and y = number of Cherry tomato plants.

- 6. What is the objective function? (ACE.2)
- 7. Other than the real-world constraints, what are the other constraints? (ACE.1)

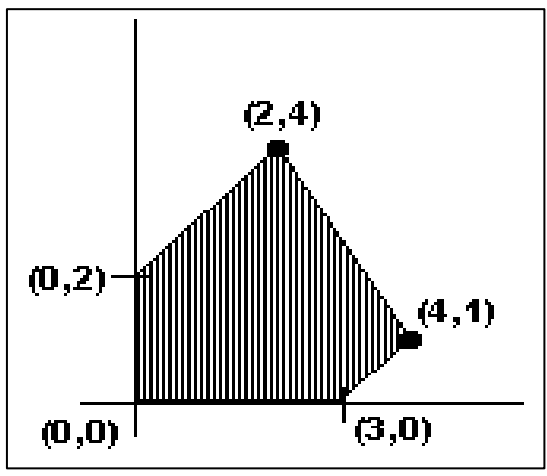
8. Given that the graph shows the correct feasible region, does the point $(5, 10)$ maximize the objective function? (ACE.3)



Use the graph to answer questions #9 and 10.

9. Given the feasible region and points of interest (vertices). Which vertex will **minimize** the objective function $C = 3x - 2y$? (ACE.3)

- 10. Which of the following points is not in the feasible region? (ACE.3)
- A) $(1, 1)$ B) $(2, 2)$ 10. _____
- C) $(1, 4)$ D) $(3, 1)$



11. Let $f(x) = -3x^2 + 1$ and $g(x) = -2x^2 + 5x - 1$. Find $f(x) - g(x)$. (AAPR.1)

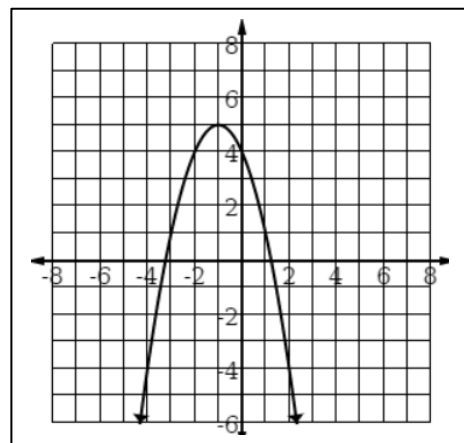
12. Using the table, which of the following statements best describes a true relationship between $f(x)$ and $g(x)$ over the interval $[2, 4]$? (FIF.6)

12. _____

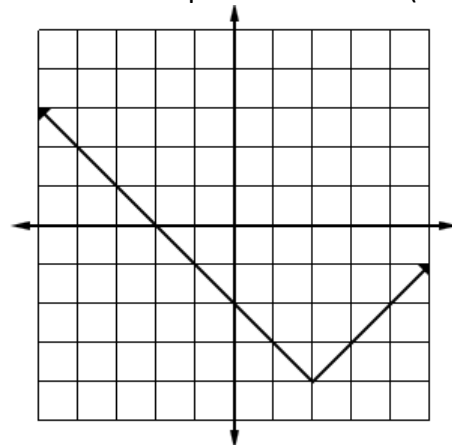
x	0	1	2	3	4
$f(x)$	1	3	5	7	9
$g(x)$	0	1	4	9	16

- A) The average rate of change of $f(x) > g(x)$.
- B) The average rate of change of $f(x) < g(x)$.
- C) The average rate of change of $f(x) = g(x)$.
- D) The average rate of change cannot be determined.

13. State the domain and range using interval notation for the graph below. (FIF.5)



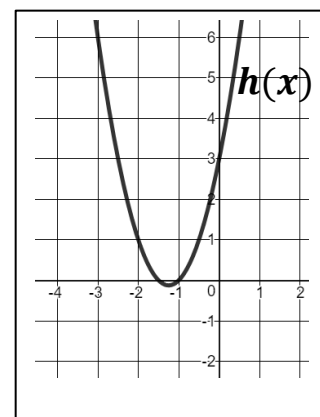
14. Given the graph of $g(x)$ to the right, describe the transformation from the parent function. (FBF.3)



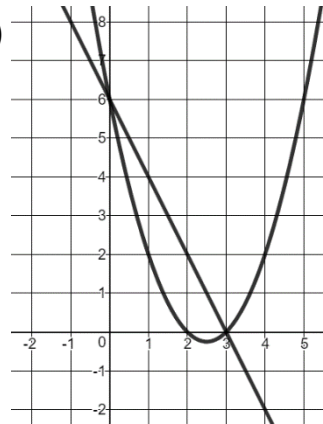
15. Given the functions $f(x) = x + 1$ and $g(x) = 2x + 3$, which operation creates $h(x)$? (AAPR.1)

15. _____

- A) $f(x) + g(x) = h(x)$
- B) $f(x) - g(x) = h(x)$
- C) $f(x) \cdot g(x) = h(x)$
- D) $f(g(x)) = h(x)$



16. Find the solutions of the system shown below. (AREI.4b)



17. Find the domain of the graph of $f(x) = x^2 - 2x + 5$. (AREI.4b)

18. Which statement **best** describes the solution(s) to $2(x + 3)^2 + 1 = 9$? (AREI.4b)

18. _____

A) $x = 2$ and $x = -8$

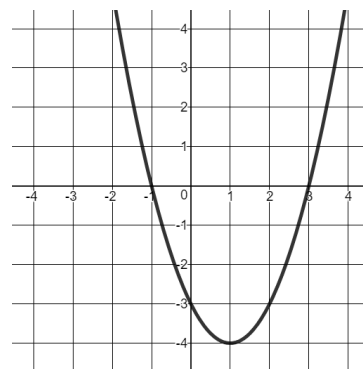
B) $x = -1$

C) $x = -1$ and $x = -5$

D) $x = 2$

19. A ball is thrown upwards from a rooftop which is above from the ground. It will reach a maximum vertical height and then fall back to the ground. The height of the ball "h" from the ground at time "t" seconds is given by, $h = -16t^2 + 64t + 80$. How long will the ball take to hit the ground? (AREI.4b)

20. Given the graph, what is the equation of the axis of symmetry? (FIF.4)



21. What is the product of $(4 - 3i)(-2 + 5i)$? (NCNS.1)

22. Which of the following is a factor of $6x^2 - 13x - 8$? (AREI.4b)

23. Susie is solving the quadratic $f(x) = 2x^2 - 4x - 3$ using the quadratic formula. She knows there is a mistake in her work. Which step in Susie's work has the error? (AREI.4b)

Susie's work

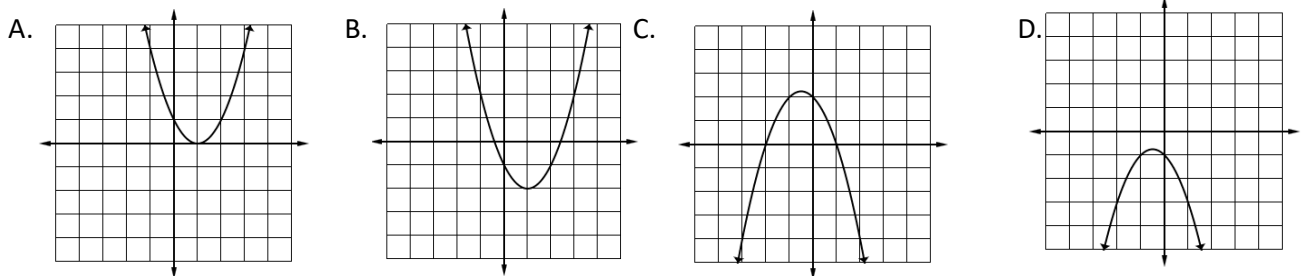
i. $x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4(2)(-3)}}{2(2)}$

ii. $x = \frac{4 \pm \sqrt{40}}{4}$

iii. $x = \frac{4 \pm 4\sqrt{10}}{4}$

iv. $1 \pm \sqrt{10}$

24. Which of the following could be the graph of a quadratic that has a discriminant of 0. 25. _____

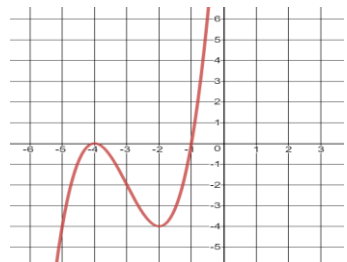


25. Find the discriminant and describe the solutions of $2x^2 - 4x + 13 = 9$ (AREI.4b)

Use the graph of the polynomial function, $f(x)$, to answer questions 26-30.

26. The function is decreasing on what intervals? (FIF.4)

27. Which ordered pair represents the relative minimum of $f(x)$? (FIF.4)



28. What is an x-value, when $f(x) = -2$? (FIF.4)

29. Which of the following statements are TRUE about the function $f(x)$? (FIF.4) 29. _____

- i. The degree is even
- ii. The leading coefficient is positive
- iii. There are 2 distinct real roots, one with multiplicity
- iv. $x \rightarrow -\infty, f(x) \rightarrow \infty$
 $x \rightarrow \infty, f(x) \rightarrow -\infty$

- A) i and ii only B) ii and iv only C) ii and iii only D) i, iii, and iv only

30. Which of the following is the equation represented by the graph? (AAPR.3) 30. _____

A) $f(x) = (x - 4)(x - 1)$

B) $f(x) = (x + 4)(x + 1)$

C) $f(x) = (x - 4)^2(x - 1)$

D) $f(x) = (x + 4)^2(x + 1)$

31. What is the remainder if $x^3 - 4x^2 + 2x - 8$ is divided by $x - 5$? (ASE.2)

32. Is $(2x^2 + 3)$ a factor of $2x^4 + 6x^3 - 5x^2 + 9x - 12$? (ASE.2)

33. Factor $3x^4 - 48$ completely. (ASE.2)

34. Solve the polynomial $x^3 - 3x^2 + 4x - 12$. (NCNS.7) 34. _____

A) 3, -4

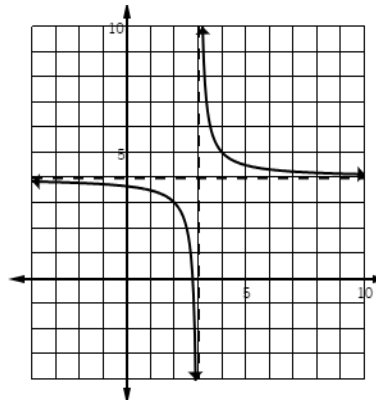
B) 3, ± 2

C) -3, $\pm 2i$

D) 3, $\pm 2i$

35. If $\sqrt{5}$ and $-3i$ are roots of a polynomial function, what are the other roots? (NCNS.9)

36. Write the equation for the horizontal asymptote for the given graph. (FIF.7)



37. What is the discontinuity for the function $f(x) = \frac{x^2 + x}{x + 1}$? (FIF.7)

38. Write the equation(s) of the vertical asymptote(s) for the given function. (FIF.7)

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

