Algebra I Individual

Haynes Mu Alpha Theta 2019

Instructions

1. You have 50 minutes for this test.
2. No calculators allowed on this test.
3. Do all scratch work on your test.
4. Provide exact answers unless otherwise stated.
5. Units are not required; if units are given, however, they must be correct.
6. Put name and school code on answer sheet.
7. Good luck and have fun!

Name_____

School_____

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20._____

Haynes MAO 2019- Algebra I Individual

1) Simplify $9 + 16 - 2 \cdot (25 \div 5 + 5)$

2) Solve $8x - 2(x + 5) = 4x + 16$

3) Taylor the Snail is at the bottom of a 40 foot well. On the first day, Taylor moves up 5 feet. At night, however, he slides down 3 feet. This continues every day and night. On what day does Taylor escape the well?

4) Solve $|2x + 7| = 5$

5) Simplify $\dfrac{a^5(b^2)^3 c^0}{a^{-2}b^5}$ (Your answer should have no negative exponents)

6) Haynes' top YouTube channels are battling for the number one spot! Hewdiepie has 74 million subscribers, and gets 1.25 million new subscribers each week. H-Series has 71 million subscribers, and gets 1.5 million new subscribers each week. In how many weeks will H-Series and Hewdiepie have the same number of subs?

7) Simplify $\dfrac{\sqrt{27} \cdot 2\sqrt{32}}{\sqrt{6}}$

8) In 2 years, Bob's age will be 3 times his sister's age 4 years ago. Currently, the sum of Bob and his sister's ages is 30. What is Bob's current age?

9) Solve $\frac{2}{3}x - 40 > \frac{1}{4}x + 20$

10) Farmer Andrew has a farm with chickens and goats. On his farm, there are 42 animals and 98 legs (not counting Andrew himself). How many goats are there?

11) Cheyanne has 50% more soda than Anita, and Harshita has 25% more soda than Anita. If Harshita has 10 liters of soda, how much does Cheyanne have?

12) The sum of all the integers from -x to (x+3) inclusive is 72. x is positive. Find x.

13) What is the sum of the x and y intercepts of $y = -\frac{3}{4}x + 6$?

14) Amie painted a rectangular mural 4 feet by 12 feet, and Andrew is going to completely frame it with a single row of square tiles 2 inches on each edge. If each tile is $0.10, find the cost, in dollars, of the tiles needed to frame the mural.

15) At Haynes, there are three types of currency: H-bucks, V-bucks, and coins. If 20 coins can be exchanged for 3 V-bucks, and 7 V-bucks can be exchanged for 9 H-bucks, how many coins are 81 H-bucks worth?
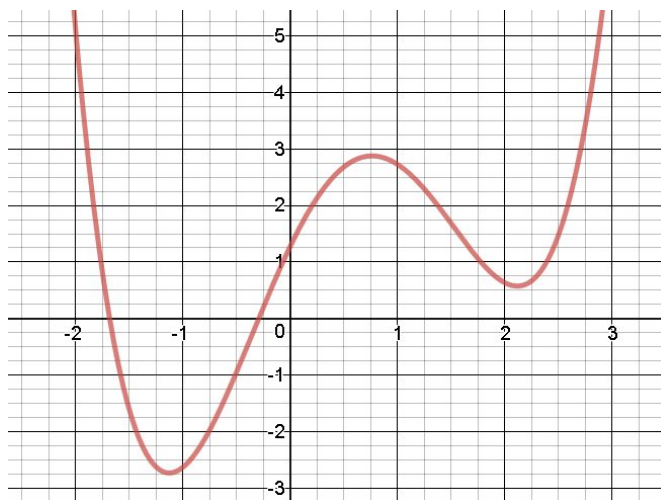
16) Find the greatest common factor of the following terms: $42x^4y, \ 12x, \ 9x^6y^2$

17) Solve $x^2 - 9x - 90 = 0$

18) Simplify $\frac{3x+6}{x^2-4} \cdot \frac{x-2}{9}$

19) Heath paints a fence in 7 days. Geoffrey paints it in 5 days. How long does it take to paint it together? (your answer should be in terms of days and hours)

20) The graph below shows a portion of the curve defined by the quartic polynomial $y = ax^4 + bx^3 + cx^2 + dx + e$. What is the sum of the coefficients of the polynomial? (Round your answer to the nearest whole integer)

Answer Key

(Note: units are not required if they are in parentheses; if provided, however, units must be correct)

1. 5
2. $x = 13$
3. 19
4. $x = -1, \ -6$
5. $a^7 b$
6. 12 (weeks)
7. 24
8. 19 (years)
9. $x > 144$
10. 7 (goats)
11. 12 (liters)
12. 22
13. 14
14. ($)19.60
15. 420 (coins)
16. $3x$
17. $x = -6, \ 15$
18. 1/3
19. 2 days 22 hours
20. 3