

ALGEBRA II SPRING FINAL EXAM REVIEW**USE PENCIL SHOW ALL WORK****DO NOT SKIP SHOWING ANY STEPS**

NAME _____ BLOCK _____

1. Write an equivalent equation in Logarithmic Form:

$$4^x = 64$$

$$(\log_b a = x)$$

2. Solve. $\log_3(x+2) - \log_3(x+1) = 1$

$$\left(\log_b \frac{a}{c} = \log_b a - \log_b c\right)$$

3. You invest \$5,000 in an account that compounds continuously at a rate of 7%. How long will it take for you to have \$26,000 in the account?

$$\left(\frac{a}{p} = e^{rt}\right)$$

4. A radioactive isotope has a half-life of 40 years. This isotope is so dangerous, it is not safe for exposure until only 30% of the isotope remains. How long will it take for a sample to be safe for exposure?

$$\left(\frac{1}{2} = e^{kt}\right); (.3 = e^{kt})$$

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For 5-6. The table below shows the numbers of registered voters, in the thousands, from a 2004 survey.

Age	Registered voters	Not Registered
18-24	14,000	13,000
25-44	49,000	32,000
45-64	51,000	19,000
65 and older	26,000	8,000

5. Find the probability a person who is not registered to vote, is between the ages of 18 and 24.

6. Find the probability that a person is between the ages of 25 and 44 and is not registered to vote.

7. How many ways can you arrange 67 pictures, if there are 18 pictures from which you can choose?

8. Find the summation of the geometric series if it exists:

$$\sum_{k=1}^{30} 6(3)^{k-1}$$

$$\left[S_n = a_1 \left(\frac{1-r^n}{1-r} \right) \right]$$

9. Find S_∞ , if it exists. If it does not exist, explain why.

$$9 + 6 + \frac{12}{3} \dots$$

$$\left(S_\infty = \frac{a_1}{1-r} \right)$$

10. Write $\overline{.73}$ as a fraction in simplest terms.

11. Write the **arithmetic** series

$-1 + 6 + 13 + 20 + 27 + 34 + 41$ in summation notation.

$$(a_n = a_k + d(n-k))$$

$$\sum \text{[]}$$

$$k = \text{[]}$$

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You launch an object from a height of 40 feet, at an initial velocity of 52 mph and at an angle of 31° from the horizontal. Show all work and round steps to four decimal places. Round final answers to two decimal places.

12. What is the initial velocity in f/s? (1 mile = 5,280 feet)

13. When will it be 20 feet off the ground?

$$h(t) = -16t^2 + vt + s \quad t = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

14. How much time will have elapsed before it lands?

$$h(t) = -16t^2 + vt + s \quad t = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

15. When will it reach its maximum height?

$$t = \frac{-b}{2a}$$

16. What is the height?

17. What is its horizontal rate?

$$\cos \theta = \frac{r}{v}$$

18. How far away will it land? $d = rt$

19. What will happen to the horizontal distance if we change the launch angle to 60° ?

ALGEBRA II FALL FINAL EXAM**USE PENCIL SHOW ALL WORK****DO NOT SKIP SHOWING ANY STEPS**

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20. Perform the Given Operations. Assume all expressions are defined.

$$\frac{\frac{3x-2}{x^2-4}}{\frac{5x+1}{x^2+x-6}}$$

21. Solve and check for extraneous solutions.

$$\frac{4x}{x-3} + \frac{x}{2} = \frac{12}{x-3}$$

22. Solve and check for extraneous solutions.

$$5\sqrt{x-1} = \sqrt{x+1}$$

23. Trenton can tile a floor in about 8 hours. When Trenton and Avi work together, they can tile a floor in about 5 hours. About how long would it take Avi to tile a floor if he works by himself?

24. Graph $f(x) = \frac{x-2}{x^2-1}$ and find the following:

Zeros:

 y -int:

Vert. Asymp.:

Holes:

Horiz. Asymp./
Slant: