

**Math IV – Grade 10 - Summer Review Packet
2019 -2020**



NAME: _____

DUE: THE FIRST DAY OF SCHOOL

MATH IV SUMMER PACKET- GRADE 10

DUE THE FIRST DAY OF SCHOOL

You are expected to bring this completed packet to class on the first day of school. In addition, this packet will count as part of your first quarter grade. **Upon returning, you will be ASSESSED on the content of this packet.** All contents outlined in the packet are in grade 10 Math IV objectives. Neatly **SHOW YOUR WORK** on a separate sheet of paper.

Solve the equation. Check for extraneous solutions.

1. $\frac{9}{x-3} = \frac{7}{x-5}$

2. $\frac{x}{30} - \frac{1}{5x} = \frac{1}{6}$

3. $\frac{2x}{x-2} = \frac{1}{x^2-4} + 1$

4. Find the maximum value or minimum value for the function.

$$f(x) = -x^2 + 6x + 4$$

5. Solve the equation. $4 - 2x^2 = 12$

6. Solve the equation. $2x^2 - x + 2 = 0$

7. **Mult/Div and simplify the following:**

b. $\frac{10i}{6i}$

b. $\frac{2+5i}{3i}$

8

c. $\frac{6-5i}{4-i}$

d. $\frac{3+2i}{5+3i}$

9

Solve the following complex equations

a. $8i + 12 = (4x)i - 2y$

b. $4(3i + 2) - 2i = (2x)i + y$

c. $18i + 3x = (9y)i$

Find all zeros of each function.

10. $f(x) = x^3 + x^2 + 9x + 9$

11. $p(x) = x^3 - 5x^2 + 11x - 15$

12. $f(x) = x^4 - 3x^3 + 21x^2 - 75x - 100$

13. $p(a) = a^3 - 10a^2 + 34a - 40$

Write an equation for the n th term of each geometric sequence.

14. 500, 350, 245, ...

15. 11, -24.2, 53.24, ...

16. 17; 187; 2057; 22,627; ...

Use Pascal triangle and expand completely

17. $(1 + 2a)^5$

18. $(5b + 1)^3$

19. $(2y^2 - 1)^6$

20.

The population of the city Suwanee, GA has consistently **grown** by 4% for the last several years. In the year 2000, the population was 9,500 people.

What would be the growth factor (multiplier)?

If the trend continues what would be the population in 2020?

21.

A culture of bacteria **triples** by the end of each hour. There were initially 50 bacteria present in the petri dish.

What would be the growth factor (multiplier)?

If the trend continues how many bacteria would there be 5 hours after the analysis began?

22.

Determine which of the following functions are exponential models of **Growth** and which are models of **Decay**.

a. $f(x) = 2 \cdot (1.05)^x$

b. $g(x) = 540 \cdot (0.92)^x + 1$

c. $h(x) = 4 \cdot \left(\frac{3}{5}\right)^x$

<i>Circle the Answer</i>
<i>Growth Decay Neither</i>

<i>Circle the Answer</i>
<i>Growth Decay Neither</i>

<i>Circle the Answer</i>
<i>Growth Decay Neither</i>

d. $y = 230 \cdot \left(\frac{7}{5}\right)^x$

e. $y = 4200 \cdot e^x - 5$

f. $y = 9 \cdot (2)^{-x}$

<i>Circle the Answer</i>
<i>Growth Decay Neither</i>

<i>Circle the Answer</i>
<i>Growth Decay Neither</i>

<i>Circle the Answer</i>
<i>Growth Decay Neither</i>

23.

Solve the following exponential equation by rewriting each as logarithmic equation and approximating the value of x .

a. $6^{2x} - 8 = 112$

b. $2 \cdot 3^{x-3} + 1 = 39367$

24.

Solve the following applications

- a. Create an equation that represents the value P of an investment t years after the initial investment. The initial investment was \$3200 and increases by 12% each year (compounded annually). This would suggest that the account value could be modeled by $P = 3200(1.12)^t$. Determine how many years it should take for the investment to double in value.

Solve each equation.

25. $\log_8 2 + \log_8 4x^2 = 1$

26. $\log_9 (x + 6) - \log_9 x = \log_9 2$

27. $\log_5 6 + \log_5 2x^2 = \log_5 48$

28. $\ln (x - 3) - \ln (x - 5) = \ln 5$

29.

If there are 20 marbles in a bag with 5 red, 10 green, 2 blue, and 3 yellow, what is the probability of pulling a green marble from the bag, then pulling a yellow marble from the bag?

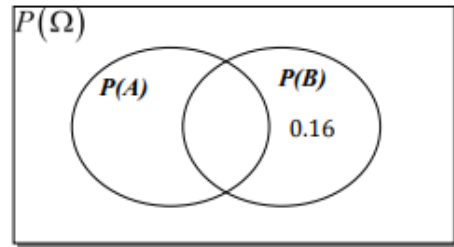
30.

A deck of cards has 52 cards, half are black and half are red. What is the probability you randomly select 3 cards without replacement and pick a red card, then 2 black cards in that order?

31.

Given the VENN Diagram and $P(A) = 0.8$ and $P(B | A) = 0.3$

A. Determine the $P(A \text{ and } B)$



B. Determine the $P(B)$

C. Determine the $P(B' \cap A)$

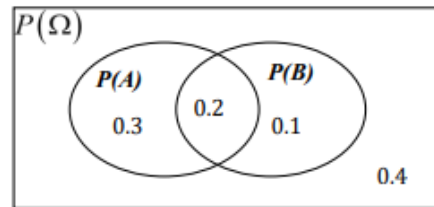
D. Determine the $P((A \cup B)')$

32

Given the following VENN Diagram answer the following.

A. $P(A | B) =$

B. $P(B | A) =$



C. $P(A | B') =$

D. $P(B | A') =$

33.

Given the $P(B) = 0.6$ and $P(A | B) = 0.2$, determine the $P(A \text{ and } B)$.

Using the Reciprocal and Quotient Identities simplify each as much as possible.

34. $\tan(\theta) \cdot \cos(\theta)$

35. $\sin(\theta) \cdot \cot(\theta) + \cos(\theta)$

36. $\frac{\cot(\theta)}{\csc(\theta)}$

37. $\frac{\cot(\theta) \cdot \sin(\theta)}{\cos(\theta)} + \cos(\theta) \cdot \sec(\theta)$

38. $\csc(\theta) \cdot \tan(\theta) - \sec(\theta)$

39.

Factor the following using a **Difference or Sum of Two Squares**.

a. $4a^2 - 25b^2$

b. $(5m^3)^2 - (6n)^2$

c. $a^2b^8 - 9p^6q^2$

d. $x^2 + 36$

e. $18p^2 - 98q^2$

f. $16w^2 + 7$

40.

Use the information provided to write the standard form equation of each circle.

a. $8x + x^2 - 2y = 64 - y^2$

b. $y^2 + 2x + x^2 = 24y - 120$

c. $x^2 + 2x + y^2 = 55 + 10y$

d. Center: $(-11, -8)$
Radius: 4

e. Center: $(-6, -15)$
Radius: $\sqrt{5}$