Powell High School **Name** _____
Honors Precalculus
Summer 2024 Assignment
Directions: Use pencil. Show all steps and select the best answer. This assignment will be due on the first day of class, and will be graded as a homework assignment. See you in August!

1. Suppose $\boldsymbol{f(x) = \frac{3x^2}{x-1}}$, determine $\boldsymbol{f(5)}$.

A) 12.25
B) 14.00
C) 15.55
D) 18.75

2. What is the slope of the line defined by the equation: $\boldsymbol{3x - 4y = 8}$?

A) $slope = \frac{3}{4}$
B) $slope = -2$
C) $slope = \frac{8}{3}$
D) $slope = +2$

3. Which of the following is a solution to the equation: $\boldsymbol{2(3x - 4) = 3 + 5x}$?

A) $x = 14$
B) $x = 12$
C) $x = 11$
D) $x = 9$

4. Which set of $\boldsymbol{x}$ values solve: $\boldsymbol{4|2x - 3| \leq 20}$?

A) $x \geq 5$
B) $-1 \leq x \leq 4$
C) $x \leq -1$
D) $4 \leq x \leq 8$

5. The expression, $\frac{x(y^3)}{y}$, can be simplified to get:

A) x^3y^2
B) $(xy)^3$
C) x^2y^2
D) xy^2

6. The expression, $\boldsymbol{x^4 \cdot x^3 \cdot x}$, can be simplified to get:

A) x^{12}
B) x^8
C) x^7
D) x^1

7. Write the complex number, $\boldsymbol{2 - i(7 + i^2)}$ in standard form.

A) $2 - 6i$
B) $3 - 7i$
C) $2 + 5i$
D) $5 - 7i$

8. Which interval contains the value $\boldsymbol{5}$?

A) $(-\infty, 5\,] \cup (6, 11)$
B) $(-3, 5) \cup (5, 10)$
C) $(5, \infty)$
D) $(-5, 5)$

9. Find the equivalent quadratic trinomial by performing the indicated operations below.

$$\boldsymbol{(2x + 3)(5x - 4)}$$

A) $10x^2 - 8x - 12$
B) $10x^2 + 15x - 12$
C) $10x^2 - 12$
D) $10x^2 + 7x - 12$

10. The factored form of the expression: $\boldsymbol{3x^5 + 12x^2}$ is:

A) $x(3x + 12)$
B) $x^5(3 + 12x)$
C) $3x^2(x^3 + 4)$
D) $3x^5(1 + 4x)$

11. The factored form of the expression: $\boldsymbol{x^2 - 2x - 15}$ is:

A) $(x-3)(x+5)$
B) $(x-2)(x+15)$
C) $(x+3)(x-5)$
D) $(x-3)(x-15)$

12. What is the value of '**A**' in the equation: $\boldsymbol{x^4 \cdot x^A = x^{12}}$?

A) $A = 8$
B) $A = 3$
C) $A = 16$
D) $A = 48$

13. What is the domain of the function: $\boldsymbol{f(x) = \sqrt{x-4}}$ **?**

A) $All\ x - values\ in\ the\ interval\ [0,4)$
B) $All\ x - values\ in\ the\ interval\ (-\infty, \infty)$
C) $All\ x - values\ in\ the\ interval\ [2, \infty)$
D) $All\ x - values\ in\ the\ interval\ [4, \infty)$

14. Which point lies on the line: $\boldsymbol{y = -\frac{2}{3}x + 8}$?

A) $(-9, 14)$
B) $(-3, 11)$
C) $(9, 17)$
D) $(10, 28)$

15. Examine the function in the x-y table. Which set defines the range of the function?

A) $\{-1,\ 6,\ 0,\ 6,\ 6\}$
B) $\{-5,\ 4,\ 0,\ 8,\ 6\}$
C) $\{-2,\ -1,\ 0,\ 1,\ 2\}$
D) $\{-3,\ 5,\ 0,\ 7,\ 8\}$

$f(x)$	
X	**Y**
-2	-3
-1	5
0	0
1	7
2	8

16. Where is the vertex of the parabola defined below located?

$$\boldsymbol{y = -2(x-3)^2 + 7}$$

A) $(6, 5)$
B) $(-2, -3)$
C) $(5, 18)$
D) $(3, 7)$

17. What is the second term in the sequence defined below?

$$\boldsymbol{a_n = 3(2)^{n-1}}$$

A) $a_2 = 18$
B) $a_2 = 9$
C) $a_2 = 6$
D) $a_2 = 3$

18. Which value of *x* **does not** satisfy the inequality: $\boldsymbol{3x - 6 < 18}$?

A) $x = 12$
B) $x = 6$
C) $x = 0$
D) $x = -4$

19. Suppose a shirt from Walmart cost \$14 on a certain day. How much would the shirt cost if the price is increased by 20%?

A) \$14.20
B) \$15.20
C) \$15.80
D) \$16.80

20. Suppose $x = 1.5$. **<u>Use your calculator</u>** to exactly evaluate the expression below.

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

A) $\frac{-52}{27}$
B) $-\frac{41}{27}$
C) $-\frac{31}{27}$
D) $-\frac{23}{27}$