

Powell High School
Honors Precalculus
Summer 2023 Assignment

Name _____

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

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

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

- 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: $2(3x - 4) = 3 + 5x$?

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

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

- 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, $x^4 \cdot x^3 \cdot x$, can be simplified to get:

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

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

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

8. Which interval contains the value 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.

$$(2x + 3)(5x - 4)$$

- 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: $3x^5 + 12x^2$ 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: $x^2 - 2x - 15$ 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: $x^4 \cdot x^A = x^{12}$?

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

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

- 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: $y = -\frac{2}{3}x + 8$?

- 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?

$$y = -2(x - 3)^2 + 7$$

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

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

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

- 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: $3x - 6 < 18$?

- 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 $x = 1.5$. **Use your calculator** to exactly evaluate the expression below.

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

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