

Chapter P Test

College Prep Algebra

Name _____

Graph each interval and write the interval in set-builder notation.

1. $(-\infty, 5)$

- A. $\{x \mid -\infty < x \text{ or } x < 5\}$
- B. $\{x \mid -\infty \leq x \text{ and } x < 5\}$
- C. $\{x \mid x \leq 5\}$
- D. $\{x \mid x < 5\}$

2. $(-12, 3) \cap [-6, 12)$

- A. $\{x \mid -6 < x < 3\}$
- B. $\{x \mid -6 \leq x < 3\}$
- C. $\{x \mid -6 < x \leq 3\}$
- D. \emptyset

Graph each interval and write the set in interval notation.

3. $\{x \mid 1 < x \leq 11\}$

- A. $(1, 11)$
- B. $(1, 11]$
- C. $(1, 11) \cap (11, \infty)$
- D. $(1, 11) \cup (11, \infty)$

4. $\{x \mid x \leq 2\} \cup \{x \mid x > 4\}$

- A. $(-\infty, 2] \cup (4, \infty)$
- B. $[-\infty, 2] \cup [4, \infty)$
- C. $(2, 4)$
- D. \emptyset

Evaluate the expression.

5. $3(2^3) - (5 - 3)^3$

- A. 8
- B. 4
- C. 24
- D. -82

6. $9 + 3[2(-1)^3 - 6^2 \div 9]$

- A. -27
- B. 15
- C. -9
- D. -3

Simplify the expression.

7. $(5x^2y^3z^4)(6x^3y^{-4}z^2)$

- A. $\frac{11x^5z^6}{y}$
- B. $\frac{30x^5z^6}{y}$
- C. $\frac{11x^6z^8}{y^{12}}$
- D. $\frac{30x^6z^8}{y^{12}}$

8. $\frac{5x^{-3}y^4}{20x^2y^7z^{-5}}$

- A. $\frac{z^5}{4xy^3}$
- B. $\frac{z^5}{4x^5y^3}$
- C. $\frac{xz^5}{4y^3}$
- D. $\frac{1}{4x^5y^3z^{-5}}$

9. $(2xy^4)^3(2x^{-4}y)^4$

- A. $\frac{128y^{16}}{x^{13}}$
- B. $128y^{16}$
- C. $\frac{128y^{16}}{x}$
- D. $128xy^{16}$

10. $\left(x^{-\frac{1}{4}}\right)\left(x^{\frac{1}{2}}\right)$

- A. $\frac{1}{x^4}$
- B. $\frac{1}{x^{\frac{3}{4}}}$
- C. $x^{\frac{3}{4}}$
- D. $x^{\frac{1}{4}}$

11. $\sqrt{32x^3y}$

- A. $4\sqrt{x^3y}$
 B. $4|x|y\sqrt{x}$
 C. $4|x|\sqrt{xy}$
 D. $4x\sqrt{xy}$

12. $\sqrt[3]{125x^2y^8}$

- A. $5\sqrt[3]{x^2y^8}$
 B. $5y^2\sqrt[3]{x^2y^2}$
 C. $5|x|y^2\sqrt[3]{y^2}$
 D. $5xy^2\sqrt[3]{y^2}$

Perform the indicated operation and express each result as a polynomial in standard form.

13. $(8x^4 + 3x^2 - 10) - (7x^2 - 6x - 12)$ 14. $(12x + y)(2x + 4y)$

- A. $8x^4 - 4x^2 + 6x + 2$
 B. $8x^4 + 10x^2 + 6x + 2$
 C. $8x^4 - 4x^2 - 6x + 2$
 D. $8x^4 - 4x^2 + 6x - 22$

- A. $24 + 50xy + 4y^2$
 B. $24x^2 + 46xy + 4y^2$
 C. $14x^2 + 18xy + 5y^2$
 D. $14x^2 + 50xy + 5y^2$

Factor completely.

15. $x^2 - 8x + 12$

- A. $(x - 2)(x + 6)$
 B. $(x + 2)(x - 6)$
 C. $(x + 2)(x + 6)$
 D. $(x - 2)(x - 6)$

16. $7x^2 + 29x + 4$

- A. $(7x + 1)(x + 28)$
 B. $(7x + 1)(x + 4)$
 C. $(7x + 28)(7x + 1)$
 D. $1(7x^2 + 29x + 4)$

17. $x^2 - 121$

- A. $(x + 121)(x - 121)$
 B. $(x + 11)(x - 11)$
 C. $(x - 11)^2$
 D. *prime*

18. $4x^3 + 22x^2 + 10x$

- A. $2x(2x + 1)(x - 10)$
 B. $2x(2x - 1)(x + 10)$
 C. $2x(2x + 1)(x + 5)$
 D. *prime*

19. $2x^2 - 3xy - 9y^2$

- A. $(x - 3y)(2x + 3y)$
 B. $(2x - 6y)(2x + 3y)$
 C. $(x - 3y)(2x + 6y)$
 D. *prime*

20. $8x^3 + 27$

- A. $(2x + 3)(4x^2 + 9)$
 B. $(2x + 3)(4x^2 + 6x + 9)$
 C. $(2x + 3)(4x^2 + 5x + 9)$
 D. *prime*

21. $3x^3 + x^2 - 75x - 25$

- A. $(x^2 - 25)(3x + 1)$
 B. $(x - 5)(x + 5)(3x + 1)$
 C. $(x - 5)(x + 5)(3x + 1)(3x + 1)$
 D. *prime*

22. $9x^2 - 12x + 4$

- A. $(3x + 2)(3x - 2)$
 B. $(3x - 2)^2$
 C. $(2x + 6)(2x - 6)$
 D. *prime*

Simplify.

23. $\frac{x-3}{x^2-10x+16} \div \frac{x^2-9}{x-8}$

- A. $\frac{x+2}{x+3}$
- B. $\frac{(x+3)}{(x-3)(x-2)}$
- C. $\frac{x+3}{x+2}$
- D. $\frac{1}{(x+3)(x-2)}$

24. $\frac{x-3}{x-5} + \frac{6}{x+6}$

- A. $\frac{x^2+9x-48}{(x-5)(x+6)}$
- B. $\frac{x^2-2x+51}{(x-5)(x+6)}$
- C. $\frac{x^2-6x+36}{(x-5)(x+6)}$
- D. $\frac{x^2+8x+54}{(x-5)(x+6)}$

Write the complex number in standard form.

25. $2 + \sqrt{-40}$

- A. $2 + i\sqrt{40}$
- B. $2 + 2i\sqrt{10}$
- C. $2 + 4i\sqrt{10}$
- D. $2 + 10i\sqrt{4}$

26. $4 - \sqrt{-48}$

- A. $4 - i\sqrt{48}$
- B. $4 - 2i\sqrt{3}$
- C. $4 - 4i\sqrt{3}$
- D. $4 - 16i\sqrt{3}$

Perform the indicated operation and write answer in simplest form.

27. $(15 + 5i) - (6 - 7i)$

- A. $21 - 2i$
- B. $9 - 2i$
- C. $21 + 12i$
- D. $9 + 12i$

28. $(3 + 5i)(5 - 4i)$

- A. $35 + 13i$
- B. $-5 + 13i$
- C. $35 - 37i$
- D. $-5 - 37i$

29. i^{38}

- A. $\sqrt{-1}$
- B. -1
- C. $-\sqrt{-1}$
- D. 1

30. $\frac{6+2i}{4+i}$

- A. $\frac{22+2i}{17}$
- B. $\frac{26+2i}{17}$
- C. $\frac{26+2i}{15}$
- D. $\frac{22+2i}{15}$