Chapter P Review 2 **Name** _____

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

1. $(-\infty, 5)$

2. $[-5, 5) \cap (-1, \infty)$

Graph each interval and write the set in interval notation.

3. $\{x \mid x \le -4\}$

4. $\{x \mid -1 < x \le 1\} \cup \{x \mid x > 7\}$

Evaluate the expression.

5. -4^4

6. $6 - 2\left[4 - \dfrac{(-5)^2 - 29}{-2^2}\right]$

7. $-4^2(-3)^2$

Simplify the expression.

8. $\left(-4x^{-3}y^2\right)^{-2}\left(8x^{-2}y^{-3}\right)^2$

9. $\dfrac{\left(-2x^4y^{-5}\right)^{-3}}{\left(4x^{-3}y^4\right)^{-2}}$

10. $\left(x^{-1/2}\right)\left(x^{3/4}\right)$

11. $\sqrt{48a^2b^7}$

12. $\sqrt[3]{-135x^2y^7}$

13. $\sqrt[3]{128x^5y^3z^8}$

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

14. $\left(5b^2-11\right)-\left(3b^2-8b-3\right)$

15. $\left(4y-5\right)\left(3y^3-2y^2-8\right)$

16. $\left(2x+5\right)^2$

17. $\left(4x-5y\right)\left(4x+5y\right)$

Factor the polynomial completely.

18. $x^2-2x-15$

19. $3x^2-4x-15$

20. $8x^3+60x^2+28x$

21. $2x^3+6x^2-5x-15$

22. $2x^2-7xy-4y^2$

23. $6x^3+9x^2+10x+15$

Simplify the rational expression.

24. $\dfrac{4x^3-25x}{8x^4+125x}$

25. $\dfrac{x^2-16}{x^2-5x+4}$

26. $\dfrac{x^2-x-6}{2x^2+x-6}\bullet\dfrac{2x^2+7x-15}{x^2-9}$

27. $\dfrac{18x^2+18x-55}{27x^2-15x+2}\div\dfrac{3x^2+29x-44}{9x^2-15x+4}$

28. $\dfrac{3x}{x+1}+\dfrac{2x+5}{x-2}$

29. $\frac{4x}{x+1} - \frac{x+1}{4x}$

30. $\frac{x}{x+1} + \frac{y}{y+1}$

Write the complex number in standard form.

31. $10 + \sqrt{-125}$

32. $22 - \sqrt{-108}$

Perform the indicated operation and write answer in simplest form.

33. $(7 - 10i) + (-11 + 3i)$

34. $(7 + 7i) - (15 - 8i)$

35. $4i(6 - 5i)$

36. $(5 - 2i)(3 + 7i)$

37. $\frac{6 + 6i}{3i}$

38. i^{80}

39. $\frac{5 + 7i}{5 - i}$

40. i^{27}