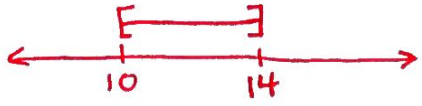
Chapter P Review 3 Name KEY

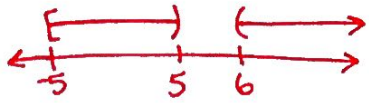
Graph each interval and write the interval in set-builder notation.

1. $[10,14]$



$\{x \mid 10 \le x \le 14\}$

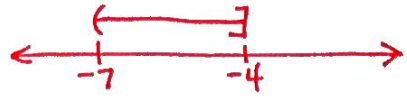
2. $[-5,5) \cap (6,\infty)$



$\emptyset$

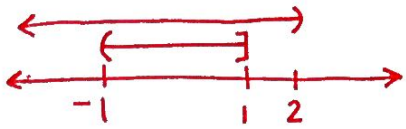
Graph each interval and write the set in interval notation.

3. $\{x \mid -7 < x \le -4\}$



$(-7,-4]$

4. $\{x \mid -1 < x \le 1\} \cup \{x \mid x < 2\}$



$(-\infty, 2)$

Evaluate the expression.

5. $-(-5)^4$ -625

6. $12 - 4\left[\frac{6}{2} - \frac{(-2)^2 - 13}{-2^2}\right]$ 9

7. $10 - 4^3(-2)^2 + 2(2-3)$ -248

Simplify the expression.

8. $\left(-2x^4y^{-2}\right)^{-3}\left(6x^4y^{-6}\right)^2 = \frac{-9}{2x^4y^6}$

9. $\frac{\left(3x^{-5}y^2\right)^{-3}}{\left(2x^{-2}y^4\right)^2} = \frac{x^{19}}{108y^{14}}$

10. $\left(x^{-1/6}\right)\left(x^{3/4}\right) = x^{7/12}$

11. $\sqrt{175a^5b^9} = 5a^2b^4\sqrt{7ab}$

12. $\sqrt[4]{81x^9y^7} = 3x^2y\sqrt[4]{xy^3}$

13. $\sqrt[3]{125x^4y^9z^7} = 5xy^3z^2\sqrt[3]{xz}$

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

14. $(2x^2+14)-(7x^2+8x-27)$ $-5x^2-8x+41$

15. $(2y+15)(2y^3+4y^2-8)$ $4y^4+38y^3+60y^2-16y-120$

16. $(5x-6)^2$ $= 25x^2-60x+36$

17. $(x-6y)(x+6y)$ $= x^2-36y^2$

Factor the polynomial completely.

18. $x^2-12x-28$ $(x-14)(x+2)$

19. $8x^3-125$ $(2x-5)(4x^2+10x+25)$

20. $2x^4+9x^3-18x^2$ $x^2(2x-3)(x+6)$

21. $16x^3+32x^2-x-2$ $(4x-1)(4x+1)(x+2)$

22. $81x^2-121$ $(9x-11)(9x+11)$

23. $3x^3+18x^2+8x+48$ $(3x^2+8)(x+6)$

Simplify the rational expression.

24. $\dfrac{32x^4-50}{4x^3-12x^2-5x+15}$

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

25. $\dfrac{9}{x-3}+\dfrac{2x}{x+1}$

$\dfrac{2x^2+3x+9}{(x-3)(x+1)}$

26. $\dfrac{x^2+3x-4}{2x^2+4x+4}\cdot\dfrac{2x^2+4x}{x^2-4x+3}$

$\dfrac{x(x+4)(x+2)}{(x^2+2x+2)(x-3)}$

27. $\dfrac{2x^2+3x-5}{6x}\div\left(2x^2+5x\right)$

$\dfrac{x-1}{6x^2}$

28. $\dfrac{x^2-5}{x^2+5x-14}-\dfrac{x+3}{x+7}$

$\dfrac{-x+1}{(x+7)(x-2)}$

Write the complex number in standard form.

29. $6+\sqrt{-90}$

$6+3i\sqrt{10}$

30. $-5-\sqrt{-150}$

$-5-5i\sqrt{6}$

Perform the indicated operation and write answer in simplest form.

31. $(8-3i)+(-13+7i)$

$-5+4i$

32. $(4+9i)-(15-5i)$

$-11+14i$

33. $5i(7-9i)$

$45+35i$

34. $(3-2i)(4+10i)$

$32+22i$

35. $\dfrac{8-12i}{4i}$

$-3-2i$

36. $i^{36}=1$

37. $\dfrac{1+4i}{3-2i}$

$\dfrac{-5}{13}+\dfrac{14}{13}i$

38. $i^{123}=-i$