

Semester Final Review Part 2

1) Draw the number classification map.

2) If a number is an integer, what other sets does it also belong to?

3) If a number is irrational, what other sets does it also belong to?

List all the sets to which the number belongs.

4) -3

5) $\sqrt{6}$

6) $\sqrt{81}$

7) $\sqrt{-5}$

8) $\frac{18}{6}$

9) $5 - 2i$

Identify the real and imaginary part of each complex number.

10) $2 + 10i$

11) $-4 + i$

Simplify.

12) $\sqrt{24}$

13) $\sqrt{108}$

14) $\sqrt[3]{32}$

15) $3\sqrt{28}$

16) $\sqrt{-256}$

17) $\sqrt{-9}$

18) $\sqrt{-48}$

19) $\sqrt{-147}$

Simplify. Use absolute value signs when necessary.

20) $\sqrt{112ab^2}$

21) $\sqrt{28x^4y^4}$

22) $\sqrt{180uv^3}$

23) $\sqrt{45u^3v^2}$

24) $\sqrt{-112x^2y^4}$

Simplify.

25) $(7 + 5i) - (-1 + 8i)$

26) $(-6 - i) + (-4 + 2i)$

27) $(2 - 7i) + (2 - 3i)$

28) $(4 - 6i)(-3 - 5i)$

29) $(-8 - 3i)(3 - 3i)$

30) $(-1 + 7i)(7 + 8i)$

Determine if the result of each situation will be rational or irrational. Give examples to support your answer.

31) Sum of a rational and an irrational number

32) Sum of two rational numbers

33) Product of two irrational numbers

34) Product of two rational numbers

35) Sum of two irrational numbers

36) Product of a rational and an irrational number

Simplify each expression.

37) $(x - 5x^3) - (2x^3 + x^2 + 5x)$

38) $(-7x^3 - 4x^2) + (x^3 + 6x^2 + 3x^4)$

Find each product.

39) $(7n + 2)^2$

40) $(x + 5)(6x + 5)$

41) $(4x + 2)(6x + 8)$

42) $(2r - 1)(6r^2 + 6r + 3)$

Evaluate each function.

43) $f(x) = x - 2$

a. $f(-5)$

b. $f(2)$

c. $f(12)$

44) $g(x) = 3x^2 + 1$

a. $g(-3)$

b. $g(4)$

c. $g(7)$

Write each expression in exponential form.

45) $\sqrt[3]{10n^2}$

46) $\sqrt{(7p)^3}$

47) $\sqrt[3]{x}$

48) $\sqrt[3]{4x^5}$

Write each expression in radical form.

49) $x^{\frac{8}{5}}$

50) $(10x)^{\frac{1}{4}}$

51) $7a^{\frac{5}{3}}$

52) $6x^{\frac{5}{2}}$

Simplify. Your answer should contain only positive exponents.

53) $(2n)^{-4} \cdot 2n^{-4}$

54) $(2a)^{-4} \cdot a^3$

$$55) \frac{3m^{-3} \cdot 2m^2}{m^{-1}}$$

$$56) \frac{n^4}{(2n^4)^{-4}}$$

$$57) 4p^{-\frac{3}{2}} \cdot 2p^{\frac{1}{2}}$$

$$58) \left(r^{-\frac{2}{3}}\right)^{-\frac{7}{4}}$$

$$59) \frac{2a^{\frac{2}{3}}}{3a^2}$$

$$60) \frac{4x^{\frac{3}{2}}}{2x^{-\frac{1}{4}}}$$

$$61) x^{\frac{3}{2}} \cdot (x^0)^{-\frac{3}{4}}$$

$$62) \frac{a^{\frac{5}{3}}}{\left(\frac{5}{4}\right)^2}$$