

1. Question Details

SPreCalc6 1.1.006.MI. [2687366]

List the elements of the given set that are natural numbers, integers, rational numbers, and irrational numbers. (Enter your answers as comma-separated lists.)

$$\left\{1.001, \frac{7}{9}, -\pi, -13, 13, \frac{13}{15}, \sqrt{16}, 3.14, \frac{15}{3}\right\}$$

(a) natural numbers

(b) integers

(c) rational numbers

(d) irrational numbers

2. Question Details

SPreCalc6 1.1.007. [1614824]

State the property of real numbers being used.

$$7 + 9 = 9 + 7$$

3. Question Details

SPreCalc6 1.1.042.MI. [3157220]

Find the indicated set if given the following. (Enter your answer as a set. Enter EMPTY for the empty set.)

$$A = \{1, 2, 3, 4, 5, 6, 7\} \quad B = \{2, 4, 6, 10\} \quad C = \{7, 8, 9, 10\}$$

(a) $A \cup B \cup C$

(b) $A \cap B \cap C$

4. Question Details

SPreCalc6 1.1.043. [2684197]

Find the indicated set if given the following.

$$A = \{x \mid x \geq -9\} \quad B = \{x \mid x < 7\} \quad C = \{x \mid -1 < x \leq 8\}$$

(a) $B \cup C$

(b) $B \cap C$

5. Question Details

SPreCalc6 1.1.052. [2684195]

Express the inequality in interval notation.

$$2 \leq x \leq 7$$



Graph the corresponding interval.

6. Question Details

SPreCalc6 1.1.064. [1613905]

Graph the set.

$$(-\infty, 4] \cap (0, 10)$$

7. Question Details

SPreCalc6 1.1.072.MI. [2687364]

Find the distance between the given numbers.



8. Question Details

SPreCalc6 1.2.024.MI. [2233557]

Evaluate each expression.

(a) $625^{-0.25}$

(b) $\left(-\frac{32}{243}\right)^{2/5}$

(c) $\left(\frac{125}{8}\right)^{-4/3}$

9. Question Details

SPreCalc6 1.2.034. [3132687]

Simplify the expression.

$$\sqrt[3]{3y^4} - \sqrt[3]{y}$$

10. Question Details

SPreCalc6 1.2.052. [2687463]

Simplify the expression and eliminate any negative exponent(s).

(a) $\left(\frac{s^3 t^{-2}}{3s^{-1} t}\right)$

(b) $\left(\frac{xy^{-4} z^{-2}}{x^4 y^5 z^{-3}}\right)^{-3}$

11. Question Details

SPreCalc6 1.2.060.MI. [2687489]

Simplify the expression. Assume x , y , and z denote any real numbers.

$$\sqrt[8]{x^8 y^4 z^4}$$

12. Question Details

SPreCalc6 1.2.070. [2687422]

Simplify the expression and eliminate any negative exponent(s). Assume that all letters denote positive numbers.

$$(a) \left(\frac{a^{1/12} b^{-4}}{x^{-1} y} \right)^4 \left(\frac{x^{-3} b^{-1}}{a^{4/3} y^{1/4}} \right)$$

$$(b) \frac{(4st)^{3/2}}{(8s^9 t^{-4})^{2/3}} \left(\frac{2s^{-6}}{3t^{1/3}} \right)^{-1}$$

13. Question Details

SPreCalc6 1.2.084. [2687457]

Use scientific notation, the Laws of Exponents, and a calculator to perform the indicated operation. State your answer correct to the number of significant digits indicated by the given data.

$$(1.098 \times 10^{21})(8.62 \times 10^{19})$$

 $\times 10^{\text{$

14. Question Details

SPreCalc6 1.2.088.MI. [2687504]

Use scientific notation, the Laws of Exponents, and a calculator to perform the indicated operations. State your answer correct to the number of significant digits indicated by the given data.

$$\frac{(3.549 \times 10^{-3})^6}{(5.06 \times 10^5)^{12}}$$

 $\times 10^{\text{$

15. Question Details

SPreCalc6 1.2.092. [1701710]

Rationalize the denominator.

(a) $\frac{1}{\sqrt[5]{a}}$

(b) $\frac{a}{\sqrt[8]{b^7}}$

(c) $\frac{1}{c^{1/6}}$

16. Question Details

SPreCalc6 1.3.040. [1613958]

Multiply the algebraic expression using a Special Product Formula and simplify.

$(\sqrt{y} + \sqrt{3})(\sqrt{y} - \sqrt{3})$

17. Question Details

SPreCalc6 1.3.056. [1615186]

Perform the indicated operations and simplify.

$(\sqrt{h^7 + 1} + 1)(\sqrt{h^7 + 1} - 1)$

18. Question Details

SPreCalc6 1.3.074.MI. [2702261]

Factor the trinomial.

$2(a + b)^2 + 5(a + b) - 3$

19. Question Details

SPreCalc6 1.3.094. [1614966]

Factor the expression completely. Begin by factoring out the lowest power of each common factor.

$x^{-1/2}(x + 2)^{1/2} + x^{1/2}(x + 2)^{-1/2}$

20. Question Details

SPreCalc6 1.3.098. [1614588]

Factor the expression completely.

$$x^2 - 16x + 63$$

21. Question Details

SPreCalc6 1.3.114. [1616015]

Factor the expression completely.

$$x^6 + 64$$

22. Question Details

SPreCalc6 1.3.124.MI. [1613746]

Factor the expression completely.

$$(a^2 + 4a)^2 - (a^2 + 4a) - 20$$

23. Question Details

SPreCalc6 1.3.128. [1703869]

Factor the expression completely. (This type of expression arises in calculus when using the "Product Rule.")

$$\frac{1}{2}x^{-1/2}(9x + 4)^{1/2} - \frac{9}{2}x^{1/2}(9x + 4)^{-1/2}$$

24. Question Details

SPreCalc6 1.4.022.MI. [2691838]

Simplify the rational expression.

$$\frac{25 - x^2}{x^3 - 125}$$

25. Question Details

SPreCalc6 1.4.028.MI. [2691872]

Perform the multiplication or division and simplify.

$$\frac{x^2 - x - 30}{x^2 + 5x} \cdot \frac{x^3 + x^2}{x^2 - 5x - 6}$$

26. Question Details

SPreCalc6 1.4.034.MI. [2691835]

Perform the multiplication or division and simplify.

$$\frac{4y^2 - 9}{2y^2 + 3y - 9} \div \frac{2y^2 + y - 3}{y^2 + 2y - 3}$$

27. Question Details

SPreCalc6 1.4.036.MI. [2691843]

Perform the multiplication or division and simplify.

$$\frac{\frac{2x^2 - 3x - 2}{x^2 - 1}}{\frac{2x^2 + 5x + 2}{x^2 + x - 2}}$$

28. Question Details

SPreCalc6 1.4.049. [2691810]

Perform the addition or subtraction and simplify.

$$\frac{2}{x^2} + \frac{9}{x^2 + x}$$

29. Question Details

SPreCalc6 1.4.054.MI. [2691869]

Perform the addition or subtraction and simplify.

$$\frac{x}{x^2 + x - 2} - \frac{7}{x^2 - 5x + 4}$$

30. Question Details

SPreCalc6 1.4.058.MI. [2691820]

Perform the addition or subtraction and simplify.

$$\frac{5}{x + 1} - \frac{7}{(x + 1)^2} + \frac{9}{x^2 - 1}$$

31. Question Details

SPreCalc6 1.4.066. [2691855]

Simplify the compound fractional expression.

$$\frac{5x^{-1} + 5y^{-1}}{3(x + y)^{-1}}$$

32. Question Details

SPreCalc6 1.4.073. [2691860]

Simplify the fractional expression. (Expressions like this arise in calculus.)

$$\sqrt{1 + \left(\frac{x}{\sqrt{81 - x^2}}\right)^2}$$

33. Question Details

SPreCalc6 1.4.080.MI. [2691867]

Simplify the expression. (This type of question arises in calculus when using the "quotient rule.")

$$\frac{(6 - 5x)^{1/2} + \frac{3}{2}x(6 - 5x)^{-1/2}}{6 - 5x}$$

34. Question Details

SPreCalc6 1.4.086.MI. [1614506]

Rationalize the denominator.

$$\frac{5(x - y)}{\sqrt{x} - \sqrt{y}}$$

35. Question Details

SPreCalc6 1.4.090. [1613269]

Rationalize the numerator.

$$\frac{\sqrt{x} - \sqrt{x+h}}{h\sqrt{x}\sqrt{x+h}}$$

36. Question Details

SPreCalc6 1.5.040. [2702326]

Solve the equation for the indicated variable. (Enter your answers as a comma-separated list.)

$$A = P\left(1 + \frac{i}{100}\right)^2; \text{ for } i$$

 $i =$

37. Question Details

SPreCalc6 1.5.105. [2702318]

Find all real solutions of the equation. (Enter your answers as a comma-separated list. If there is no real solution, enter NO REAL SOLUTION.)

$$|3x + 7| = 5$$

 $x =$

38. Question Details

SPreCalc6 1.5.108. [2702241]

Solve the equation. (Enter your answers as a comma-separated list. If there is no real solution, enter NO REAL SOLUTION.)

$$|x - 2| = -8$$

x =