

Student: _____ Instructor: Dawn Nolan Assignment: Chapter 10 Review
 Date: _____ Course: P5 Algebra 1 Honors

1. Use the Pythagorean theorem to find the unknown side of the right triangle.

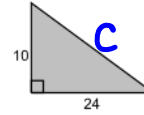
$$a^2 + b^2 = c^2$$

$$10^2 + 24^2 = c^2$$

$$100 + 576 = c^2$$

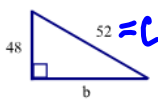
$$\pm \sqrt{676} = \sqrt{c^2}$$

$$+26 = c$$



Hypotenuse length = 26
 (Simplify your answer. Type exact answers, using radicals as needed.)

2.



$$48^2 + b^2 = 52^2$$

$$2304 + b^2 = 2704$$

$$\underline{-2304} \quad \underline{-2304}$$

$$b^2 = 400$$

$$b = 20$$

Find the length of the third side of the right triangle. Give an exact answer and an approximation to three decimal places if needed.

The length of the third side is 20.
 (Simplify your answer. Type an integer or a decimal.)

3. Any set of positive integers that satisfies the equation $a^2 + b^2 = c^2$ is a Pythagorean triple. Determine whether the set of numbers is a Pythagorean triple.

4, 11, 15

$$4^2 + 11^2 = 15^2$$

Is the set of numbers a Pythagorean triple?

- No
 Yes

$$16 + 121 = 225$$

$$137 \neq 225$$

4. Simplify the radical expression.

$$\sqrt{175} = 5\sqrt{7}$$

(Type an exact answer, using radicals as needed.)

$$\sqrt{175} = \sqrt{5 \cdot 5 \cdot 7} = 5\sqrt{7}$$

$$\sqrt{5^2} = 5 \quad \sqrt{5 \cdot 5}$$

5. Rationalize the denominator.

$$\frac{\sqrt{5}}{\sqrt{6}} = \frac{\sqrt{30}}{6}$$

The answer is $\frac{\sqrt{30}}{6}$.
 (Simplify your answer. Type an exact answer, using radicals as needed. Use integers or fractions for any numbers in the expression.)

$$\frac{\sqrt{5}}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{\sqrt{5 \cdot 6}}{\sqrt{6 \cdot 6}} = \frac{\sqrt{30}}{6}$$

6. Simplify. Assume that all variables are positive.

$$\sqrt{12x^{13}} = 2x^6\sqrt{3x}$$

(Type an exact answer, using radicals as needed.)

$$\sqrt{12x^{13}} = \sqrt{2 \cdot 2 \cdot 3 \cdot x^6 \cdot x^6 \cdot x} = 2x^6\sqrt{3x}$$

7. Simplify the product.

$$\sqrt{8} \cdot \sqrt{32} = 16$$

(Type an exact answer, using radicals as needed.)

$$\sqrt{8 \cdot 32} = \sqrt{256} = 16$$

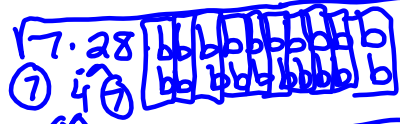
$$\sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2} = 2 \cdot 2 \cdot 2 \cdot 2 = 2^4 = 16$$

8. Simplify the product.

$$\sqrt{7b^9} \cdot \sqrt{28b^{11}} = 14b^{10}$$

$\sqrt{7b^9} \cdot \sqrt{28b^{11}} =$ _____ (Type an exact answer, using radicals as needed.)

$$\sqrt{196b^{20}} = 14b^{10}$$



$$\sqrt{2 \cdot 7 \cdot 7} = 14b^{10}$$

9. Find a root that is a real number.

$$\sqrt{\frac{4}{9}}$$

$$\sqrt{\frac{4}{9}} = \frac{\sqrt{4}}{\sqrt{9}} = \frac{2}{3}$$

$$\sqrt{\frac{4}{9}} = \frac{2}{3}$$

(Simplify your answer.)

10. Explain why the radical expression is or is not in simplified form.

$$\frac{17}{\sqrt{17}}$$

$$\frac{17\sqrt{17}}{\sqrt{17 \cdot 17}} = \frac{17\sqrt{17}}{17} = \sqrt{17}$$

Choose the correct answer below.

- A. The expression is simplified because the radicand has no perfect-square factors other than 1.
- B. The expression is not in simplified form because a radical appears in the denominator of a fraction.
- C. The expression is simplified because the radicand contains no fractions.
- D. The expression is not simplified because it contains a fraction.

11. Simplify the radical expression.

$$\frac{-11}{\sqrt{a^7}}$$

$$\frac{-11\sqrt{a}}{a^4}$$

$$\frac{-11}{\sqrt{a^7}} = \frac{-11 \sqrt{a}}{a^3 \sqrt{a \cdot a}} = \frac{-11\sqrt{a}}{a^3 \cdot a} = \frac{-11\sqrt{a}}{a^4}$$

$$\sqrt{a^3 a^3 a} = a \cdot a \cdot a \sqrt{a} = a^3 \sqrt{a}$$

(Simplify your answer. Type an exact answer, using radicals as needed. Rationalize all denominators.)

12. Simplify the radical expression.

$$\frac{\sqrt{150}}{\sqrt{3}}$$

$$\frac{\sqrt{150}}{\sqrt{3}} = \sqrt{\frac{150}{3}} = \sqrt{50} = \sqrt{2 \cdot 5 \cdot 5} = 5\sqrt{2}$$

The answer is _____.

(Simplify your answer. Type an exact answer, using radicals as needed. Rationalize all denominators.)

13. Simplify the radical expression.

$$(\sqrt{2}-2)^2 = 6-4\sqrt{2}$$

$$(a+b)^2 = a^2 + 2ab + b^2$$

$$2 - 4\sqrt{2} + 4 = 6 - 4\sqrt{2}$$

$$5\sqrt{2} (\sqrt{2}-2)(\sqrt{2}-2)$$

(Simplify your answer. Type an exact answer, using radicals as needed.)

14. Simplify the radical expression.

$$\frac{13\sqrt{2}}{(4+\sqrt{3})(4-\sqrt{3})}$$

$$\frac{13\sqrt{2}(4-\sqrt{3})}{(4+\sqrt{3})(4-\sqrt{3})} = \frac{52\sqrt{2} - 13\sqrt{6}}{16-3}$$

$$\begin{aligned} 0 \quad \sqrt{2}(-2) &= -2\sqrt{2} \\ 1 \quad -2(\sqrt{2}) &= -2\sqrt{2} \\ L \quad -2(-2) &= 4 \end{aligned}$$

The simplified expression is _____.

(Type an exact answer, using radicals as needed. Do not factor.)

$$\frac{52\sqrt{2} - 13\sqrt{6}}{13} = \frac{4\sqrt{2} - \sqrt{6}}{1}$$

<https://vlitemprod.nearsoncmg.com/api/v1/print/math>

$$\frac{13\sqrt{2}(4-\sqrt{3})}{(4+\sqrt{3})(4-\sqrt{3})} = \frac{13\sqrt{2}(4) - 13\sqrt{2}\sqrt{3}}{13} = \frac{52\sqrt{2} - 13\sqrt{6}}{13}$$

$$\begin{aligned} F: 4 \cdot 4 &= 16 \\ O: 4(-\sqrt{3}) &= -4\sqrt{3} \\ T: \sqrt{3} \cdot 4 &= 4\sqrt{3} \\ L: \sqrt{3}(-\sqrt{3}) &= -3 \end{aligned}$$

$$\frac{52\sqrt{2}}{13} - \frac{13\sqrt{6}}{13} = 4\sqrt{2} - \sqrt{6}$$

15. Simplify the sum.

$$4\sqrt{10} + 9\sqrt{10}$$

The answer is $13\sqrt{10}$.

(Type an exact answer, using radicals as needed.)

$$4\sqrt{10} + 9\sqrt{10}$$

$$(4+9)\sqrt{10}$$

$$13\sqrt{10}$$

$$4x + 9x$$

$$13x$$

16. Simplify the difference.

$$10\sqrt{2} - \sqrt{8}$$

$10\sqrt{2} - \sqrt{8} = 8\sqrt{2}$

(Type an exact answer, using radicals as needed.)

$$10\sqrt{2} - \sqrt{8}$$

$$10\sqrt{2} - 2\sqrt{2}$$

$$8\sqrt{2}$$

$$\sqrt{8} = \sqrt{2 \cdot 2 \cdot 2}$$

$$2\sqrt{2}$$

$$10\sqrt{2} - 2\sqrt{2} = 8\sqrt{2}$$

17. Multiply as indicated. If possible, simplify any square roots that appear in the product.

$$\sqrt{3}(\sqrt{21} - \sqrt{3})$$

$\sqrt{3}(\sqrt{21} - \sqrt{3}) = 3\sqrt{7} - 3$

(Simplify your answer. Type an exact answer, using radicals as needed.)

$$\sqrt{3}(\sqrt{21} - \sqrt{3}) = \sqrt{3 \cdot 21} - \sqrt{3 \cdot 3}$$

$$3\sqrt{7} - 3$$

18. Simplify the product.

$$6\sqrt{5}(\sqrt{11} - 2\sqrt{2})$$

$6\sqrt{5}(\sqrt{11} - 2\sqrt{2}) = 6\sqrt{55} + 12\sqrt{10}$

(Simplify your answer. Type an exact answer, using radicals as needed.)

$$6\sqrt{5}\sqrt{11} - 6\sqrt{5}(-2\sqrt{2})$$

$$6\sqrt{5 \cdot 11} + 12\sqrt{5 \cdot 2}$$

$$6\sqrt{55} + 12\sqrt{10}$$

$$\sqrt{3 \cdot 7} - 3$$

$$3\sqrt{7} - 3 \text{ or } -3 + 3\sqrt{7}$$

19. Simplify the product.

$$(8 + \sqrt{10})(8 - \sqrt{10})$$

$(8 + \sqrt{10})(8 - \sqrt{10}) = 54$

(Simplify your answer.)

$$a^2 - b^2$$

$$= 64 - 10$$

$$64 + \sqrt{10}(-\sqrt{10})$$

$$64 - 10 = 54$$

F: 8 8	64
O: 8(-√10)	-8√10
I: √10 · 8	8√10
Li: √10(-√10)	-10
	54

20. Simplify the quotient.

$$\frac{9}{\sqrt{2}-1}$$

$\frac{9}{\sqrt{2}-1} = \frac{9\sqrt{2}+9}{2-1} = \frac{9\sqrt{2}+9}{1} = 9\sqrt{2}+9$

(Type an exact answer, using radicals as needed.)

$a^2 \cdot b$

$$\frac{9(\sqrt{2}+1)}{(\sqrt{2}-1)(\sqrt{2}+1)} = \frac{9\sqrt{2}+9}{2-1} = \frac{9\sqrt{2}+9}{1} = 9\sqrt{2}+9$$

$$\sqrt{2}(\sqrt{2}+1) - 1(\sqrt{2}+1)$$

21. Simplify.

$$3\sqrt{75} + \sqrt{48} - \sqrt{50}$$

$3\sqrt{75} + \sqrt{48} - \sqrt{50} = 15\sqrt{3} + 4\sqrt{3} - 5\sqrt{2}$

(Type an exact answer, using radicals as needed.)

$$3\sqrt{75} + \sqrt{48} - \sqrt{50}$$

$$3 \cdot 5\sqrt{3} + 4\sqrt{3} - 5\sqrt{2}$$

$$15\sqrt{3} + 4\sqrt{3} - 5\sqrt{2}$$

$$\sqrt{2} \cdot \sqrt{2}$$

$$\sqrt{2 \cdot 2}$$

$$2 + \sqrt{2} - \sqrt{2} - 1 = 1$$

22. Solve the following radical equation. Check your solution.

$$(\sqrt{x+9})^2 = (\sqrt{x-1})^2$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The solution is $x =$ _____
(Simplify your answer. Use a comma to separate answers as needed.)
- B. There is no solution.

$$3\sqrt{3 \cdot 5} + \sqrt{2 \cdot 2 \cdot 2 \cdot 3} - \sqrt{2 \cdot 5 \cdot 5}$$

$$3 \cdot 5\sqrt{3} + 2 \cdot 2\sqrt{3} - 5\sqrt{2}$$

$$15\sqrt{3} + 4\sqrt{3} - 5\sqrt{2}$$

$$19\sqrt{3} - 5\sqrt{2}$$

23. Solve.

$\sqrt{x} - 4 = 6$

$$\begin{array}{r} \sqrt{x} - 4 = 6 \\ +4 \quad +4 \\ \hline (\sqrt{x})^2 = (10)^2 \end{array}$$

$x = 100$

Select the correct choice below and, if necessary, fill in the answer box within your choice.

- A. The solution is $x = 100$.
(Simplify your answer. Type an integer or a fraction. Use a comma to separate answers as needed.)
- B. There is no solution.

$$\begin{array}{r} \sqrt{100} - 4 = 6 \\ 10 - 4 = 6 \\ 6 = 6 \checkmark \end{array}$$

24. Solve the radical equation. Check your solution.

$\sqrt{3a+7} = 7$

$$\sqrt{3a+7} = 7$$

$$\begin{array}{r} 3a+7 = 49 \\ -7 \quad -7 \\ \hline 3a = 42 \\ \frac{3a}{3} = \frac{42}{3} \\ a = 14 \end{array}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. $a = 14$.
(Simplify your answer. Use a comma to separate answers as needed.)
- B. There is no solution.

$$\begin{array}{r} \sqrt{42+7} = 7 \\ \sqrt{49} = 7 \\ 7 = 7 \checkmark \end{array}$$

25. Tell which solutions, if any, are extraneous.

$-z = \sqrt{-z+110}; z = -11, z = 10$

Choose the correct answer below.

- A. The value $z = 10$ is an extraneous solution.
- B. The value $z = -11$ is an extraneous solution.
- C. The values $z = 10$ and $z = -11$ are extraneous solutions.
- D. Neither $z = 10$ nor $z = -11$ are extraneous solutions.

$$\begin{array}{r} -(-11) = \sqrt{-(-11)+110} \\ 11 = \sqrt{11+110} \\ 11 = \sqrt{121} \\ 11 = 11 \checkmark \end{array}$$

$$\begin{array}{r} -10 = \sqrt{-10+110} \\ -10 = \sqrt{100} \\ (-10)^2 \neq (10)^2 \end{array}$$

26. Solve the radical equation. Check your solution.

$x = \sqrt{3x+4}$

$$\begin{array}{r} -1 = \sqrt{3(-1)+4} \\ -1 = \sqrt{-3+4} \\ -1 = \sqrt{1} \\ -1 \neq 1 \end{array}$$

$$\begin{array}{r} 4 = \sqrt{3(4)+4} \\ 4 = \sqrt{16} \\ 4 = 4 \checkmark \end{array}$$

extraneous

Select the correct choice and fill in any answer boxes in your choice below.

- A. $x = 4$.
(Use a comma to separate answers as needed. Type exact answers, using radicals as needed.)
- B. There is no solution.

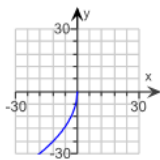
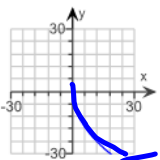
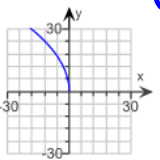
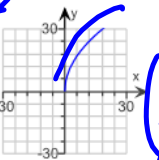
$$x^2 = (\sqrt{3x+4})^2$$

$$\begin{array}{r} x+1=0 \quad x-4=0 \\ -1 \quad -1 \quad +4 \quad +4 \\ \hline x^2 - 3x - 4 = 0 \\ (x+1)(x-4) = 0 \end{array}$$

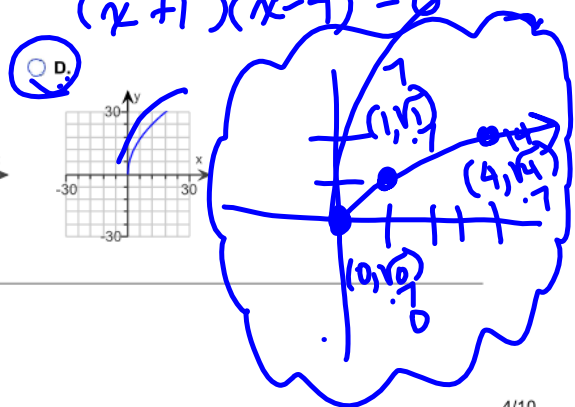
27. Graph the function.

$y = 7\sqrt{x}$

Choose the correct graph below.

- A. 
- B. 
- C. 
- D. 

$y = -7\sqrt{x}$



$g = \sqrt{A}$ $A \geq 0$ $D:$ $x+1 \geq 0 \rightarrow x \geq -1$ $(-1, 0)$

28. Find the domain of the function.

$y = \sqrt{x+1}$

The domain is the set of numbers x where $x \geq -1$.

29. Find the domain of the function.

$y = \sqrt{6x-17}$

The domain is $x(1) \geq \frac{17}{6}$. (Type an integer or a simplified fraction.)

- (1) \leq $=$
 $>$ \neq
 \geq
 $<$

$6x-17 \geq 0$
 $+17 +17$
 $6x \geq 17$
 $\frac{6x}{6} \geq \frac{17}{6}$
 $x \geq \frac{17}{6}$

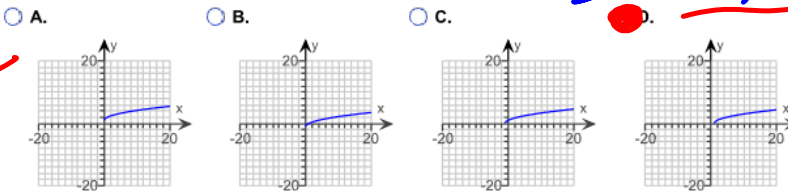
$\sqrt{-5}$ not a real #
 $\sqrt{0} = 0$

30. Match the function with its graph.

$y = \sqrt{x-1}$

$x-1 \geq 0$
 $+1 +1$
 $x \geq 1$
 $x \geq 1$ $(1, 0)$

Choose the correct graph below.



Starting pt. (h, k)

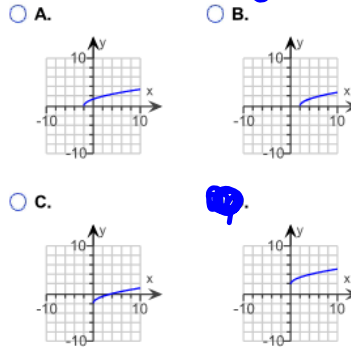
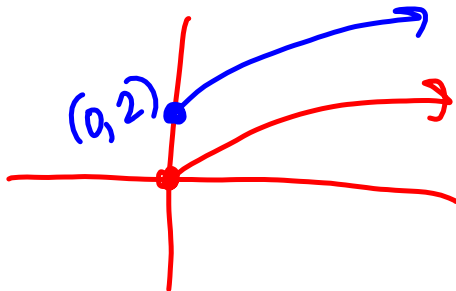
$y = a\sqrt{x-h} + k$

31. Graph the following function.

$y = \sqrt{x+2}$

up 2 $(0, 2)$

Choose the best graph.



32. What are the domain and range of the function $y = \sqrt{8-4x}$?

The domain of the function is the set of all real numbers (1) _____
 (Type an integer or decimal rounded to the nearest hundredth as needed.)

The range of the function is the set of all real numbers (2) _____
 (Type an integer or decimal rounded to the nearest hundredth as needed.)

- (1) less than
 greater than or equal to
 greater than
 less than or equal to
- (2) less than
 less than or equal to
 greater than or equal to
 greater than

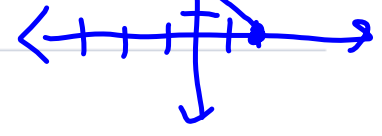
$$8 - 4x \geq 0$$

$$\frac{-8}{-4} \leq \frac{-4x}{-4} \leq \frac{-8}{-4}$$

$$2 \leq x \leq 2$$

$$y = \sqrt{8-4x} = \sqrt{8-8} = \sqrt{0} = 0$$

(2, 0)



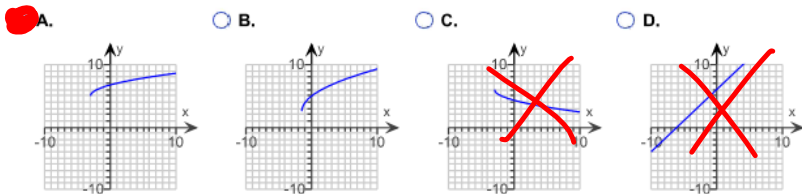
x	y
0	6.7
1	7
6	8

33. Make a table of values and graph the function.

$$f(x) = \sqrt{x+3} + 5$$

(-3, 5)

Choose the correct graph below.

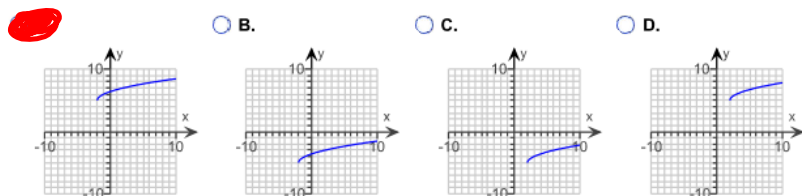


34. Graph the function by translating the graph of $y = \sqrt{x}$.

$$y = \sqrt{x+2} + 5$$

(-2, 5)

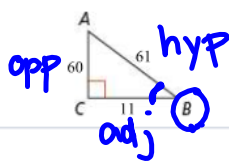
Choose the correct graph below.



35. Write the ratio for $\cos B$.

$$\cos B = \frac{11}{61}$$

(Type an integer or a simplified fraction.)

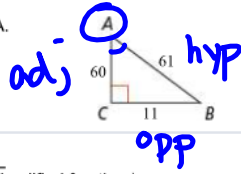


SOHCAHTOA

$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

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36. Write the ratio for $\sin A$.

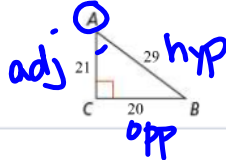


$\sin = \frac{\text{OPP}}{\text{hyp}}$

$\sin A = \frac{11}{61}$

(Type an integer or a simplified fraction.)

37. Write the ratio for $\tan A$.



TOA

$\tan \theta = \frac{\text{OPP}}{\text{adj}}$

$\tan A = \frac{20}{21}$

(Type an integer or a simplified fraction.)

38. Use a calculator to find the trigonometric value.

$\tan 68^\circ$

$\tan 68^\circ = 2.4751$

(Type an integer or decimal rounded to four decimal places as needed.)

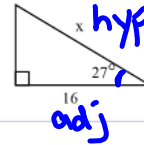
39. Find the value of x to the nearest tenth.

$17.95 \rightarrow 18.0$

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$\cos \theta = \frac{\text{adj}}{\text{hyp}}$

$\cos 27 = \frac{16}{x}$



$x = \frac{16}{\cos 27}$

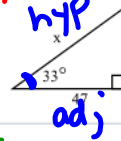
$x = 18.0$ (Simplify your answer. Round to the nearest tenth as needed.)

40. Find the value of x to the nearest tenth.

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$\cos \theta = \frac{\text{adj}}{\text{hyp}}$

$\cos 33 = \frac{47}{x}$



$x = \frac{47}{\cos 33}$

$x = 56.0$ (Simplify your answer. Round to the nearest tenth as needed.)

41. How tall is a building that casts a 70-ft shadow when the angle of elevation of the sun is 31° ?

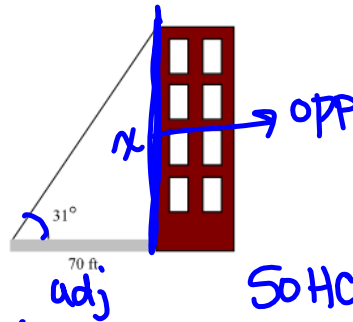
The building is 42.06 ft tall.

(Simplify your answer. Type an integer or a decimal. Round to the nearest hundredth if needed.)

$\tan \theta = \frac{\text{OPP}}{\text{adj}}$

$70 \cdot \tan 31 = \frac{x}{70} \cdot 70$

$x = 70 \cdot \tan 31^\circ = 42.06024$



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1. 26

2. 20

3. No

4. $5\sqrt{7}$

5. $\frac{\sqrt{30}}{6}$

6. $2x^6\sqrt{3x}$

7. 16

8. $14b^{10}$

9. $\frac{2}{3}$

10. B. The expression is not in simplified form because a radical appears in the denominator of a fraction.

11. $-\frac{11\sqrt{a}}{a^4}$

12. $5\sqrt{2}$

13. $6 - 4\sqrt{2}$

14. $4\sqrt{2} - \sqrt{6}$

15. $13\sqrt{10}$

16. $8\sqrt{2}$

17. $3\sqrt{7} - 3$

18. $6\sqrt{55} - 12\sqrt{10}$

19. 54

20. $9\sqrt{2} + 9$

21. $19\sqrt{3} - 5\sqrt{2}$

22. B. There is no solution.

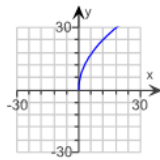
23. A. The solution is $x = \underline{\mathbf{100}}$.
 (Simplify your answer. Type an integer or a fraction. Use a comma to separate answers as needed.)

24. A. $a = \underline{\mathbf{14}}$ (Simplify your answer. Use a comma to separate answers as needed.)

25. A. The value $z = 10$ is an extraneous solution.

26. A. $x = \underline{\mathbf{4}}$ (Use a comma to separate answers as needed. Type exact answers, using radicals as needed.)

27.



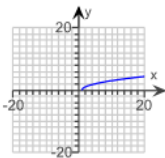
D.

28. -1

29. $(1) \geq$

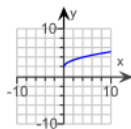
$$\frac{17}{6}$$

30.



D.

31.



D.

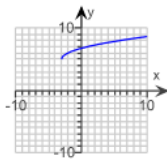
32. (1) less than or equal to

2

(2) greater than or equal to

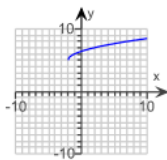
0

33.



A.

34.



A.

35. $\frac{11}{61}$

36. $\frac{11}{61}$

37. $\frac{20}{21}$

38. 2.4751

39. 18.0

40. 56.0

41. 42.06
