

**Student:** yaser almohaws  
**Submitted:** 12/27/14 2:47am

**Instructor:** fahad aljabr  
**Course:** MATH-001: Fundamentals of  
Math 11415  
**Book:** Bittinger: Introductory and  
Intermediate Algebra, 4e

**Assignment:** Graded Homework 12

1. At a height of  $h$  meters, you can see  $V$  kilometers to the horizon. These numbers are related by the equation  $V = 3.5\sqrt{h}$ . A person can see 392 km to the horizon from an airplane window. How high is the airplane?

The airplane is 12544 meters high.

(Simplify your answer. Type an integer or a fraction.)

YOU ANSWERED: 11236

2. Divide. Then simplify by taking roots, if possible. Assume that all expressions under radicals represent positive numbers.

$$\frac{\sqrt[3]{54a^4b^8}}{\sqrt[3]{2a^2b^7}}$$

$$\frac{\sqrt[3]{54a^4b^8}}{\sqrt[3]{2a^2b^7}} = 3\sqrt[3]{a^2b}$$

3. Simplify by factoring.

$$\sqrt[4]{96}$$

The answer is  $2\sqrt[4]{6}$ .

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

4. Subtract and simplify.

$$(6 + 6i) - (-3 - i)$$

$$(6 + 6i) - (-3 - i) = 9 + 7i$$

(Simplify your answer. Type your answer in the form  $a + bi$ .)

YOU ANSWERED:  $12 + 7i$

5. Simplify by factoring. Assume that all expressions under the radical represent nonnegative numbers.

$$\sqrt[5]{64x^{12}y^{20}}$$

$$\sqrt[5]{64x^{12}y^{20}} = 2x^2y^4\sqrt[5]{2x^2}$$

(Simplify your answer. Type in radical form.)

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6. Find the following. Assume that  $c$  can represent any real number. Use absolute value notation when necessary.

$$\sqrt{(-9c)^2}$$

$$\sqrt{(-9c)^2} = 9|c|$$

(Simplify your answer.)

7. The diagonal of a square has length  $10\sqrt{2}$  ft. Find the length of the side of the square.

The length of the side of a square is 10 ft.

8. Solve.

$$\sqrt{x+7} + 5 = x$$

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

A. The solution is  $x = 9$ .

(Simplify your answer. Type an integer or a fraction. Use a comma to separate answers as needed.)

B. The solution is not a real number.

YOU ANSWERED: A, [1]

9. Divide. Then simplify by taking roots, if possible. Assume all expressions under radicals represent positive numbers.

$$\frac{\sqrt{2025xy}}{3\sqrt{3}}$$

$$\frac{\sqrt{2025xy}}{3\sqrt{3}} = 5\sqrt{3xy}$$

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

10. Simplify.

$$i^{21}$$

$$i^{21} = i$$

(Simplify your answer. Type your answer in the form  $a + bi$ .)

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11. Approximate the square root.

$$\sqrt{600}$$

The answer is 24.495. (Round your answer to the nearest thousandth.)

YOU ANSWERED:  $10\sqrt{6}$

12. Divide and simplify to the form  $a + bi$ .

$$\frac{6 - 2i}{2 + 6i}$$

The answer is  $-i$ .

13. Solve.

$$\sqrt[3]{x + 8} = 4$$

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

- A. The solution is  $x = 56$ .  
(Simplify your answer. Type an integer or a fraction. Use a comma to separate answers as needed.)
- B. The solution is not a real number.

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14. Find the indicated values for the function  $f(x) = \sqrt{4x - 12}$ .

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

A.  $f(4) = 2$  (Round to the nearest hundredth as needed.)

B. The function value is not a real number.

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

A.  $f(3) = 0$  (Round to the nearest hundredth as needed.)

B. The function value is not a real number.

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

A.  $f(1) = \square$  (Round to the nearest hundredth as needed.)

B. The function value is not a real number.

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

A.  $f(-1) = \square$  (Round to the nearest hundredth as needed.)

B. The function value is not a real number.

15. Express in terms of  $i$ .

$$\sqrt{-81} + \sqrt{-200}$$

$$\sqrt{-81} + \sqrt{-200} = (9 + 10\sqrt{2})i$$

(Simplify your answer. Type your answer in the form  $a + bi$ .)

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16. Simplify by taking roots of the numerator and denominator. Assume that all expressions under the radicals represent positive numbers.

$$\sqrt{\frac{9y^5}{x^6}}$$

$$\sqrt{\frac{9y^5}{x^6}} = \frac{3y^2\sqrt{y}}{x^3}$$

YOU ANSWERED:  $\frac{9y^2}{x^3}\sqrt{y}$

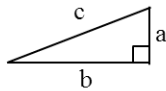
17. Determine whether the complex number is a solution of the equation.

$$1 + 9i; x^2 - 2x + 82 = 0$$

Is  $1 + 9i$  a solution of the equation  $x^2 - 2x + 82 = 0$ ?

- Yes  
 No

18. In the right triangle, find the length of the side not given. Give an exact answer and an approximation to three decimal places.



$$b = 4, c = \sqrt{21}$$

What is the exact value of  $a$ ?

$$\sqrt{5}$$

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

What is the approximation to three decimal places for  $a$ ?

$$2.236$$

(Round to the nearest thousandth.)

19. Simplify by factoring.

$$\sqrt{75}$$

$$\sqrt{75} = 5\sqrt{3}$$

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

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20. Solve.

$$3 + \sqrt{z-5} = \sqrt{z+10}$$

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

- A. The solution is  $z = 6$ .  
(Simplify your answer. Type an integer or a fraction. Use a comma to separate answers as needed.)
- B. The solution is not a real number.

21. Multiply and simplify by factoring. Assume that all expressions under radicals represent nonnegative numbers.

$$\sqrt{5b^3} \sqrt{35c^4}$$

$$\sqrt{5b^3} \sqrt{35c^4} = 5bc^2\sqrt{7b}$$

(Simplify your answer. Type in radical form.)

22. Find the following. Assume that  $x$  can represent any real number. Use absolute value notation when necessary.

$$\sqrt{x^2 - 6x + 9}$$

$$\sqrt{x^2 - 6x + 9} = |x - 3|$$

23. Multiply.

$$(8 + 7i)(6 - 2i)$$

$$(8 + 7i)(6 - 2i) = 62 + 26i$$

(Simplify your answer. Type your answer in the form  $a + bi$ . Do not factor.)

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24. Find the following.

$$\sqrt[16]{(-3)^{16}}$$

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

A.  $\sqrt[16]{(-3)^{16}} = 3$  (Simplify your answer.)

B. The root is not a real number.

25. Simplify.

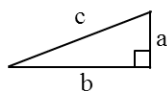
$$\sqrt[3]{-\frac{1}{125}}$$

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

A.  $\sqrt[3]{-\frac{1}{125}} = -\frac{1}{5}$  (Simplify your answer. Type a fraction or an integer.)

B. The root is not a real number.

26. In the right triangle, find the length of the side not given. Give an exact answer and an approximation to three decimal places.



$$a = 2, b = 9$$

What is the exact value of  $c$ ?

$$\sqrt{85}$$

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

What is the value of  $c$  approximated to 3 decimal places?

$$9.220$$

(Round to the nearest thousandth as needed.)

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27. Simplify by taking roots of the numerator and the denominator. Assume that all expressions under radicals represent positive numbers.

$$\sqrt[3]{\frac{343x^5}{y^3}}$$

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

A.  $\sqrt[3]{\frac{343x^5}{y^3}} = \frac{7x\sqrt[3]{x^2}}{y}$  (Type an exact answer, using radicals as needed.)

B. The root is not a real number.

28. Determine the domain of the function.

$$f(x) = \sqrt{5x - 2}$$

A.  $\{x \mid x \geq \frac{2}{5}\}$

B.  $\{x \mid x \leq \frac{2}{5}\}$

C.  $\{x \mid x \neq \frac{2}{5}\}$

D.  $\{x \mid x \text{ is any real number}\}$

29. Find the following:  $\sqrt[3]{y^3}$ . Assume that letters can represent any real number.

The answer is  $y$ .



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30. Multiply and simplify. Assume that all expressions under the radicals represent nonnegative numbers.

$$\sqrt{xy^3} \sqrt[5]{x^4y}$$

Choose the correct expression below.

A.  $\sqrt[10]{x^{13}y^{17}}$

B.  $xy \sqrt[10]{x^3y^7}$

C.  $x^2y^2 \sqrt{x}$

D.  $xy \sqrt{x^3y^7}$