

Assignment Calendar

Date	Day	Assignment
9/26/21 9/27/21	Thursday (A) Friday (B)	Chapter 1 Test 2.1- Simplifying Radicals/Rational Exponents
9/30/21 9/31/21	Monday (A) Tuesday (B)	2.2- Complex Numbers
10/1/21 10/2/21	Wednesday (A) Thursday (B)	2.3- Absolute Values
10/3/21 10/6/21 10/7/21	Friday (A) Monday – Labor Day (No School) Tuesday (B)	2.4- Piecewise Functions
10/8/21 10/9/21	Wednesday (A) Thursday (B)	Chapter 2 Practice Test
10/10/21 10/13/21	Friday (A) Monday (B)	Chapter 2 Test NO HOMEWORK!

2.1 Practice Problems

For #1-17, Simplify:

1. $\sqrt{72}$ 2. $4\sqrt{3}\sqrt{21}$ 3. $\sqrt{5}\sqrt{30}\sqrt{18}$ 4. $\sqrt{\frac{27}{100}}$ 5. $\frac{11}{\sqrt{7}}$ 6. $\frac{2\sqrt{6}}{\sqrt{8}}$ 7. $\frac{1}{3-\sqrt{2}}$
8. $\frac{4\sqrt{2}}{5+\sqrt{6}}$ 9. $\frac{6+\sqrt{3}}{2-\sqrt{3}}$ 10. $\frac{8+\sqrt{5}}{8-\sqrt{5}}$ 11. $\sqrt[3]{b^{21}}$ 12. $\sqrt{27x^2y^5}$ 13. $(8x^3)^{\frac{2}{3}}$
14. $(16b^{-2})^{\frac{-1}{2}}$ 15. $\sqrt[4]{\frac{x}{y^8}}$ 16. $\sqrt{xy} \cdot \sqrt{x^3y^5}$ 17. $\sqrt[3]{x} \sqrt[4]{x}$

For #18-22 use: $f(x) = -2x+3$; $g(x) = 4x - 11$; $h(x) = -5$; $d(x) = -3x^2$

18. $f(-6)$ 19. Find x if $d(x) = -27$ 20. $f(x) \bullet g(x)$ 21. $g(d(x))$ 22. $g(f(-13))$

For #23-26, Graph each line on a coordinate system.

23. $6x - 3y = 9$ 24. $y - 2 = \frac{1}{2}(x + 4)$ 25. $f(x) = -5x$ 26. $16x = -32$

2.2 Practice Problems

Simplify:

1. $i + 6i$ 2. $-1-8i - 4 - i$ 3. $-3 + 6i - 5 - 3i - 8i$ 4. $4i(-2 - 8i)$ 5. $(5i)(i)(-2i)$
6. $(-2-i)(4+i)$ 7. $(4-5i)(4+i)$ 8. $(1-7i)^2$ 9. $(-2-2i)(-4-3i)(7+8i)$ 10. $-6i(8-6i)(-8-8i)$
11. $\frac{3}{5i}$ 12. $\frac{6+8i}{9i}$ 13. $\frac{-3+10i}{6i}$ 14. $\frac{-4+10i}{3+4i}$ 15. $\frac{-5-3i}{7-10i}$

Graph each number in the complex plane:

16. $-3+4i$ 17. $-2i$ 18. $4+6i$

Solve the following equations:

19. $x^2 = -16$ 20. $3x^2 - 11 = -50$ 21. $2x^2 - 4 = -20$ 22. $3x^2 - 7 = -31$

Simplify:

23. $-2i^{25}\sqrt{-6}\sqrt{3}$

24. $3i^{18}\sqrt{-9}\sqrt{8}$

25. $(i\sqrt{11} + 3)^2$

26. $(i\sqrt{2} + 5)(i\sqrt{2} - 5)$

2.3 Practice Problems**Graph the following and state the domain and range:**

1. $y = \frac{2}{5}|x + 2| - 4$

2. $f(x) = -\frac{1}{2}|x - 4| + 3$

3. $f(x) = -4|x + 3| - 5$

4. $y = 2|x| + 6$

5. The vertex of an absolute value equation is at (4, -8) and goes through the point (7, 1). Write the absolute value equation.

6. The Leonard P. Zakim Bunker Hill Bridge spans the Charles River in Boston. The bridge is suspended from two towers. The towers come together as a point and form a triangle with the road. The dimensions of the tower include the points (0,0), (69, 140), and (138, 0). Write an absolute value function that represents the inverted V-shaped portion of the tower.

7. A hiker walks up and down a hill. The hill has a cross section that can be modeled by $y = -\frac{4}{3}|x - 300| + 400$ where x and y are measured in feet and $0 \leq x \leq 600$. How far does the hiker walk?**Solve each equation:**

8. $|p - 1| = 4$

9. $|3 + 7x| = 73$

10. $\frac{|x+4|}{10} = 2$

11. $-4|b - 2| - 9 = -37$

12. $4 - 9|-6 - b| = -14$

13. $-8|3 - 8k| = 40$

14. $|2x - 1| = 4x$

15. $|6x + 10| = 3x - 8$

16. The horizontal bar used in gymnastics events should be placed 110.25 inches above the ground, with a tolerance of 0.4 inch. Write an absolute value inequality for the acceptable bar heights.

17. Write an equation in slope-intercept form for the line that passes through the point (12, 8) and is parallel to the line $y = \frac{8}{3}x + 7$ 18. Write an equation in slope-intercept form for the line that passes through (-5, 17) and is perpendicular to $y = -5x + 6$

19. What is an equation of a line that passes through (4, 7) and is perpendicular to the graph of the line that passes through the points (1, 3) and (-2, 9)

20. Write an equation of a vertical line that goes through the point (-2, 11)

2.4 Practice Problems**Graph the following piecewise functions:**

1. $f(x) = \begin{cases} -6 & \text{if } x < -1 \\ 3x - 2 & \text{if } -1 \leq x \leq 3 \\ -2x + 5 & \text{if } x > 3 \end{cases}$

2. $f(x) = \begin{cases} 0 & \text{if } x < -3 \\ -2|x| + 2 & \text{if } -3 \leq x < 1 \\ 2x & \text{if } x \geq 1 \end{cases}$

3. Graph: $g(x) = \begin{cases} -3 & \text{if } 0 < x \leq 2 \\ 1 & \text{if } 2 < x \leq 4 \\ 5 & \text{if } 4 < x \leq 6 \end{cases}$

4. Mary's water bill changes as the amount of water used changes. If Mary uses 100 gallons to 500 gallons the cost is 15 cents a gallon plus a \$20 fee to encourage conservation. If Mary uses over 500 gallons the cost is 20 cents a gallon plus a \$50 fee to encourage conservation. Write a piecewise function to represent the cost of water with x representing the amount of water used in gallons and C(x) the cost of water in dollars.

5. Cindy has quarters and nickels totaling \$5.35. Write a linear equation in standard form to model this situation.

6. To earn an A in a course, you must have a final average of at least 90%. On the first four examinations, you have grades of 89%, 82%, 95% and 86%. If the final examination counts as two grades, what must you get on the final to earn an A in the course?

7. Tony has seven bills, all tens and twenties that total \$100. How many of each bill does he have?

For #9-10, graph the following system

8. $\begin{cases} 4x + y = 4 \\ x + y = -5 \end{cases}$

9. $f(x) = \begin{cases} |x + 3| + 2 & \text{if } x < 0 \\ -x^2 + 2 & \text{if } x \geq 0 \end{cases}$

10. Graph $y = -|x + 4| + 1$ over the domains $(-6, -2] \cup [0, 4]$

11. Graph $y = 2|x - 1| - 3$ over the domains $[-2, 2) \cup (4, 5]$

Unit 2 Practice Test**Solve the following:**

1. $x^2 = -38$

2. $9 - 4y^2 = 57$

3. $6t^2 + 5 = 2t^2 + 1$

Simplify:

4. $(6 - 3i) + (5 + 4i)$

5. $-2 + 6i - (-4 + 2i) - 10i$

6. $(2 + 3i)(2 - 3i)$

7. $(1 + 4i)^2$

8. $\frac{2+7i}{-5i}$

9. $\frac{-3i}{4-6i}$

Graph each number in the complex plane:

10. $-2 - 2i$

11. $4i$

12. $3 + 6i$

Solve:

13. $-3|4 - 2r| = 21$

14. $-3|9m + 2| + 10 = 10$

15. $2|x - 1| = 4x$

16. The vertex of an absolute value equation is at $(4, -1)$ and goes through the point $(3, 2)$. Write the equation of the function.**Simplify:**

17. $(27a^9)^{\frac{2}{3}}$

18. $\sqrt[4]{x^7y^{12}}$

19. The circumference of a volleyball should be 26 inches, with a tolerance of 0.5 inch. Write and solve an absolute value inequality that describes the acceptable circumferences of a volleyball.

20. Graph $f(x) = \begin{cases} -2x + 1 & \text{if } x < -2 \\ |x - 2| & \text{if } -2 \leq x \leq 3 \\ (x - 4)^2 - 3 & \text{if } x > 3 \end{cases}$

21. Troy's cell phone bill changes as the amount of minutes used changes. If Troy uses less than 200 minutes a month, the cost is 12 cents per minute. If Troy uses 200 to 500 minutes, the cost per minute is 15 cents per minute plus a \$10 monthly fee. If Troy uses more than 500 minutes the cost per minute is 20 cents plus a \$15 monthly fee. Write a piecewise function to represent the cost of a cell phone with x representing the number of minutes used and $C(x)$ representing the cost of the cell phone in dollars.

22. Write and graph a function that describes how much it will cost to send a letter depending on the weight of the letter. If the weight of the letter is over 0 oz and up to 1 oz, it will cost 39 cents. If the weight of the letter is more than 1 oz and up to 2 oz, then the price is 41 cents. If the weight of the letter is more than 2 oz and up to 3 oz, then the price is 43 cents.

Graph the following absolute value equations and state the domain and range:

23. $y = -2|x + 4| - 3$

24. $f(x) = \frac{1}{3}|x - 1| - 5$

Simplify:

25. $\sqrt{88}$

26. $2\sqrt{12}\sqrt{15}$

27. $\frac{9}{\sqrt{8}}$

28. $\frac{6}{4-\sqrt{6}}$

29. Write the equation in slope-intercept form that passes through the point $(4, 5)$ and is perpendicular to the line $y = 2x + 3$ **For #30-31 use: $f(x) = 6x - 9$; $g(x) = 4x^2$;**30. Find $g(x + 2)$ 31. Find $f(g(x))$

32. Graph $y = -3|x - 2| + 4$ over the domains $(-5, -1] \cup [0, 4)$

33. Graph $y = \frac{1}{2}|x + 4| - 2$ over the domains $(-9, -2) \cup [0, 6]$

34. $-5i^{40}\sqrt{-15}\sqrt{5}$

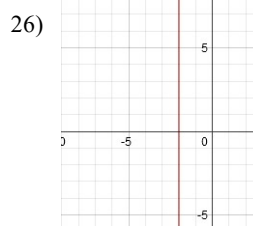
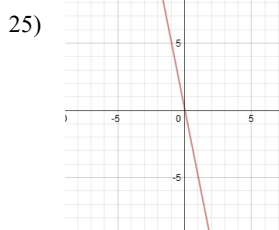
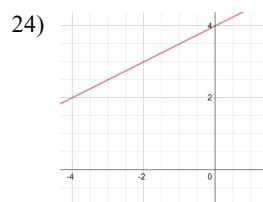
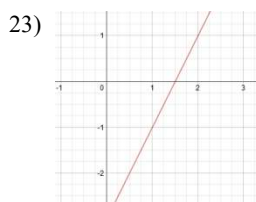
35. $3i^{26}\sqrt{-11}\sqrt{22}$

2.1 Answers:

1) $6\sqrt{2}$ 2) $12\sqrt{7}$ 3) $30\sqrt{3}$ 4) $\frac{3\sqrt{3}}{10}$ 5) $\frac{11\sqrt{7}}{7}$ 6) $\sqrt{3}$ 7) $\frac{3+\sqrt{2}}{7}$ 8) $\frac{20\sqrt{2}-8\sqrt{3}}{19}$ 9) $15+8\sqrt{3}$

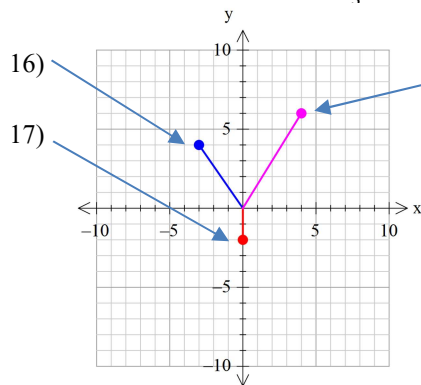
10) $\frac{69+16\sqrt{5}}{59}$ 11) b^7 12) $3xy^2\sqrt{3y}$ 13) $4x^2$ 14) $\frac{b}{4}$ 15) $\frac{\sqrt[4]{x}}{y^2}$ 16) x^2y^3 17) $\sqrt[12]{x^7}$

18) 15 19) ± 3 20) $-8x^2 + 34x - 33$ 21) $-12x^2 - 11$ 22) 105



2.2 Answers:

1) $7i$ 2) $-5 - 9i$ 3) $-8 - 5i$ 4) $32 - 8i$ 5) $10i$ 6) $-7 - 6i$ 7) $21 - 16i$ 8) $-48 - 14i$ 9) $-98 + 114i$
 10) $-96 + 672i$ 11) $-\frac{3i}{5}$ 12) $\frac{6i-8}{-9}$ or $\frac{8-6i}{9}$ 13) $\frac{10+3i}{6}$ 14) $\frac{28+46i}{25}$ 15) $\frac{-5-71i}{149}$

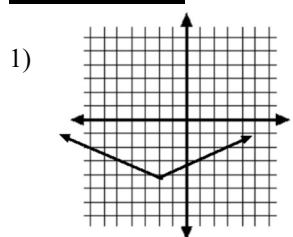


18) 19) $\pm 4i$ 20) $\pm i\sqrt{13}$

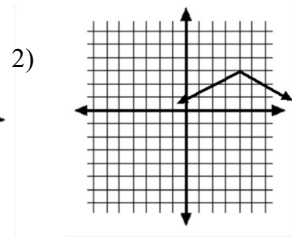
21) $\pm 2i\sqrt{2}$ 22) $\pm 2i\sqrt{2}$

23) $6\sqrt{2}$ 24) $-18i\sqrt{2}$ 25) $-2 + 6i\sqrt{11}$ 26) -27

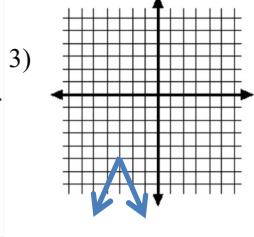
2.3 Answers:



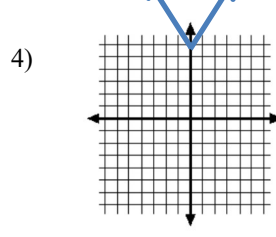
D: $(-\infty, \infty)$ R: $[-4, \infty)$



D: $(-\infty, \infty)$ R: $(-\infty, 3]$



D: $(-\infty, \infty)$ R: $(-\infty, -5]$



D: $(-\infty, \infty)$ R: $[6, \infty)$

5) $y = 3|x - 4| - 8$ 6) $y = \frac{-140}{69}|x - 69| + 140$ 7) 1000 ft

8) 5, -3 9) $10, \frac{-76}{7}$ 10) 16, -24 11) 9, -5 12) -8, -4 13) no solution

14) $1/6$

15) No Solution

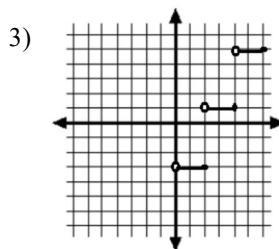
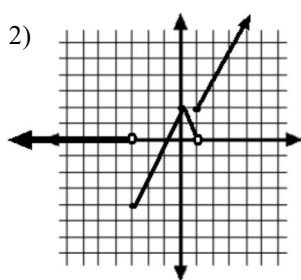
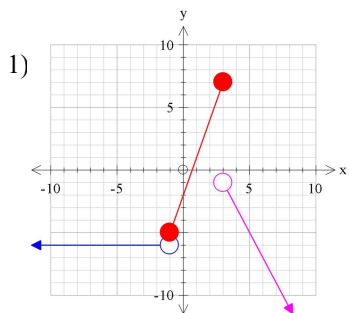
16) $109.85 \leq x \leq 110.65$

17) $y = 8/3x - 24$

18) $y = 1/5x + 18$

19) $y = 1/2x + 5$

20) $x = -2$

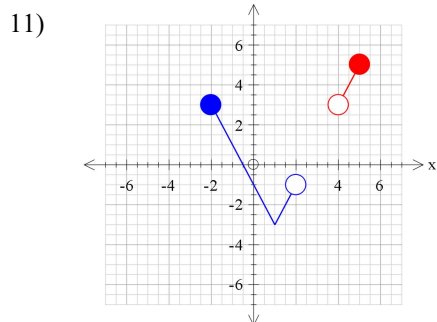
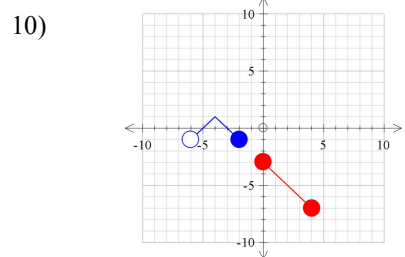
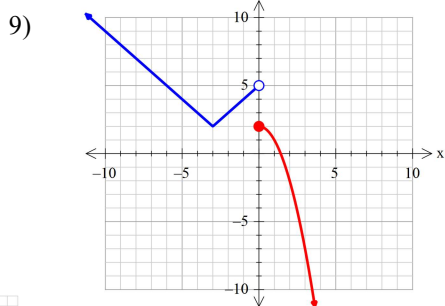
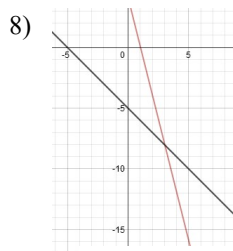
2.4 Answers:

$$4) \begin{cases} .15x + 20 & \text{if } 100 \leq x \leq 500 \\ .20x + 50 & \text{if } x > 500 \end{cases}$$

5) $.25q + .05n = 5.35$

6) 94%

7) 4 tens and 3 twenties

**Unit 2 Practice Test Answers:**

1) $\pm i\sqrt{38}$

2) $\pm 2i\sqrt{3}$

3) $\pm i$

4) $11 + i$

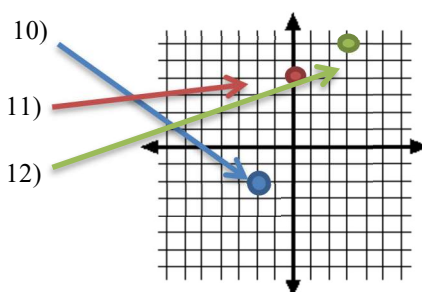
5) $2 - 6i$

6) 13

7) $-15 + 8i$

8) $\frac{2i-7}{5}$

9) $\frac{-6i+9}{26}$



13) No Solution

14) $-2/9$

15) $1/3$

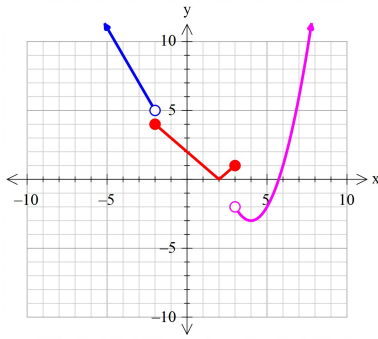
16) $y = 3|x - 4| - 1$

17) $9a^6$

18) $xy^3\sqrt[4]{x^3}$

19) $25.5 \leq x \leq 26.5$

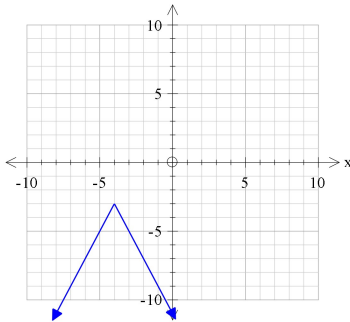
20)



21)
$$\begin{cases} 0.12x & \text{if } x < 200 \\ 0.15x + 10 & \text{if } 200 \leq x \leq 500 \\ 0.2x + 15 & \text{if } x > 500 \end{cases}$$

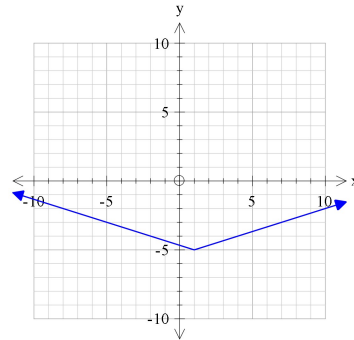
22)
$$\begin{cases} 0.39 & \text{if } 0 < x \leq 1 \\ 0.41 & \text{if } 1 < x \leq 2 \\ 0.43 & \text{if } 2 < x \leq 3 \end{cases}$$

23)



D: $(-\infty, \infty)$ R: $(-\infty, -3]$

24)



D: $(-\infty, \infty)$ R: $[-5, \infty)$

25) $2\sqrt{22}$

26) $12\sqrt{5}$

27) $\frac{9\sqrt{2}}{4}$

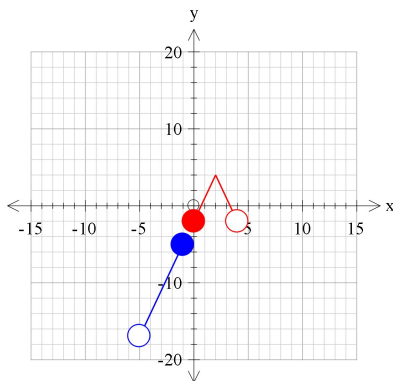
28) $\frac{12+3\sqrt{6}}{5}$

29) $y = -1/2x + 7$

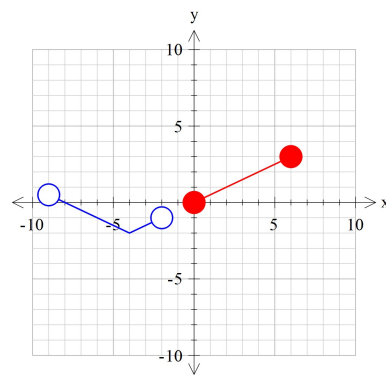
30) $4x^2 + 16x + 16$

31) $24x^2 - 9$

32)



33)



34) $-25i\sqrt{3}$

35) $-33i\sqrt{2}$