



وزارة التربية والتعليم
MINISTRY OF EDUCATION

السنة ٢٠٢٥
الأكاديمي ٢٠٢٦

MATH GRADE 9ADV EOT TERM1

School principal
Asma Alhariti



Math department
.NOORA



Part 1

الفترة 2025-2026
الأكاديمي 2026-2027

1) Solve multi-step linear inequalities

Lesson 6-1

Pag 254 Q (16-21)**Solving One-Step Inequalities****Solve each inequality. Then graph the solution on a number line.**

16. $-3(7n + 3) < 6n$

17. $21 \geq 3(a - 7) + 9$

18. $2y + 4 > 2(3 + y)$

19. $3(2 - b) < 10 - 3(b - 6)$

20. $7 + t \leq 2(t + 3) + 2$

21. $8a + 2(1 - 5a) \leq 20$

2) Solve equations involving more than one operation

Lesson 2-3

PAG 88 Q (1-12)**Solving Multi-Step Equations****Use properties of equality to solve each equation. Check your solution.**

1. $3t + 7 = -8$

2. $8 = 16 + 8n$

3. $-34 = 6m - 4$

4. $9x + 27 = -72$

5. $\frac{y}{5} - 6 = 8$

6. $\frac{f}{-7} - 8 = 2$

7. $1 + \frac{r}{9} = 4$

8. $\frac{k}{3} + 4 = -16$

9. $\frac{n-2}{7} = 2$

10. $14 = \frac{6+z}{-2}$

11. $-11 = \frac{a-5}{6}$

12. $\frac{22-w}{3} = -7$

3) Calculate and interpret slope

Lesson 4-2

PAG 226 Q (38-45)**Rate of Change and Slope**

Find the value of r so the line that passes through each pair of points has the given slope.

38. $(12, 10), (-2, r), m = -4$

39. $(r, -5), (3, 13), m = 8$

40. $(3, 5), (-3, r), m = \frac{3}{4}$

41. $(-2, 8), (r, 4), m = -\frac{1}{2}$

42. $(r, 3), (5, 9), m = 2$

43. $(5, 9), (r, -3), m = -4$

44. $(r, 2), (6, 3), m = \frac{1}{2}$

45. $(r, 4), (7, 1), m = \frac{3}{4}$

4) Solve and graph linear inequalities containing the word and

Lesson 6-3

PAG 363 Q (1-10)**Solving Compound Inequalities**

Solve each compound inequality. Then graph the solution set.

1. $f - 6 < 5$ and $f - 4 \geq 2$

2. $n + 2 \leq -5$ and $n + 6 \geq -6$

3. $y - 1 \geq 7$ or $y + 3 < -1$

4. $t + 14 \geq 15$ or $t - 9 < -10$

5. $-5 < 3p + 7 \leq 22$

6. $-3 \leq 7c + 4 < 18$

7. $5h - 4 \geq 6$ and $7h + 11 < 32$

8. $22 \geq 4m - 2$ or $5 - 3m \leq -13$

9. $-y + 5 \geq 9$ or $3y + 4 < -5$

10. $-4a + 13 \geq 29$ and $10 < 6a - 14$

5) Solve proportions**PAG 115 Q (61-66)**

Lesson 2-6

Solving Proportions**Solve each proportion. If necessary, round to the nearest hundredth.**

61. $\frac{m-2}{4} = \frac{5}{20}$

62. $\frac{9}{5} = \frac{3}{x+7}$

63. $\frac{5}{b} = \frac{3}{b-6}$

64. $\frac{2p+3}{3} = \frac{4p-7}{2}$

65. $\frac{3y+4}{5} = \frac{y-1}{4}$

66. $\frac{2}{w} = \frac{7}{w+5}$

6) Graph the solutions of linear inequalities in two variables.**PAG 379 Q (1-8)**

Lesson 6-5

Graphing Inequalities in Two Variables**Graph each inequality.**

1. $y < x - 3$

2. $y > x + 12$

3. $y \geq 3x - 1$

4. $y \leq -4x + 12$

5. $6x + 3y > 12$

6. $2x + 2y < 18$

7. $5x + y > 10$

8. $2x + y < -3$

9. $-2x + y \geq -4$

Solve each inequality. Then graph the solution on a number line.

16. $-3(7n + 3) < 6n$

17. $21 \geq 3(a - 7) + 9$

18. $2y + 4 > 2(3 + y)$

19. $3(2 - b) < 10 - 3(b - 6)$

20. $7 + t \leq 2(t + 3) + 2$

21. $8a + 2(1 - 5a) \leq 20$

8) Solve absolute value equations**PAG 105 Q (11-18)**

Lesson 2-5

**Solving Equations
Involving Absolute Value****Solve each equation.**

11. $|7 - 2q| = 3$

12. $|4x - 2| = 26$

13. $|w + 1| = 5$

14. $|n + 2| = -1$

15. $|m - 2| = 2$

16. $|5c - 3| = 1$

17. $|2t + 6| = 4$

18. $|8k - 5| = -4$

9) Graph and interpret linear functions.

Lesson 4-3

PAG 235 Q (15-18) PAG 236 Q (29-39)

Slope-Intercept Form

- 15. SAVINGS** Wade's grandmother gave him \$100 for his birthday. Wade wants to save his money to buy a portable game console that costs \$275. Each month, he adds \$25 to his savings. Write an equation in slope-intercept form to represent Wade's savings y after x months.
- 16. FITNESS CLASSES** Toshelle wants to take strength training classes at the community center. She has to pay a one-time enrollment fee of \$25 to join the community center, and then \$45 for each class she wants to take. Write an equation in slope-intercept form for the cost of taking x classes.
- 17. EARNINGS** Macario works part time at a clothing store in the mall. He is paid \$9 per hour plus 12% commission on the items he sells in the store. Write an equation in slope-intercept form to represent Macario's hourly wage y .
- 18. ENERGY** From 2002 to 2005, U.S. consumption of renewable energy increased an average of 0.17 quadrillion BTUs per year. About 6.07 quadrillion BTUs of renewable power were produced in the year 2002. Write an equation in slope-intercept form to find the amount of renewable power P in quadrillion BTUs produced in year y between 2002 and 2005.
- 29. STREAMING** An online company charges \$13 per month for the basic plan. They offer premium channels for an additional \$8 per month.
- Write an equation in slope-intercept form for the total cost c of the basic plan with p premium channels in one month.
 - Graph the equation.
 - What would the monthly cost be for a basic plan plus 3 premium channels?
- 30. CAR CARE** Suppose regular gasoline costs \$2.76 per gallon. You can purchase a car wash at the gas station for \$3.
- Write an equation in slope-intercept form for the total cost y of purchasing a car wash and x gallons of gasoline.
 - Graph the equation.
 - Find the cost of purchasing a car wash and 8 gallons of gasoline.

10) Create and identify equations of parallel or perpendicular lines.

PAG 304 Q (25-30)

Lesson 5-2

Writing Equations in Standard and Point-Slope Forms

Write an equation in slope-intercept form for the line that passes through the given point and is parallel to the graph of the equation. Then write an equation for the line that passes through the given point and is perpendicular to the graph of the equation.

25. $(3, -2); y = x + 4$

26. $(4, -3); y = 3x - 5$

27. $(0, 2); y = -5x + 8$

28. $(-4, 2); y = -\frac{1}{2}x + 6$

29. $(-2, 3); y = -\frac{3}{4}x + 4$

30. $(9, 12); y = 13x - 4$

11) Identify and graph piecewise-defined function

Lesson 4-6

PAG 259 EX1 266 Q(18 a,b, c, d)

Piecewise and Step Functions

Example 1 Graph a Piecewise-Defined Function

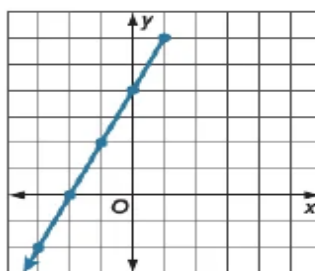
To graph a piecewise-defined function, graph each “piece” separately.

Graph $f(x) = \begin{cases} 2x + 4 & \text{if } x \leq 1 \\ -x + 3 & \text{if } x > 1 \end{cases}$. State the domain and range.

First, graph $f(x) = 2x + 4$ if $x \leq 1$.

- Create a table for $f(x) = 2x + 4$ using values of $x \leq 1$.
- Because x is *less than or equal to* 1, place a dot at (1, 6) to indicate that the endpoint is included in the graph.
- Then, plot the points and draw the graph beginning at (1, 6).

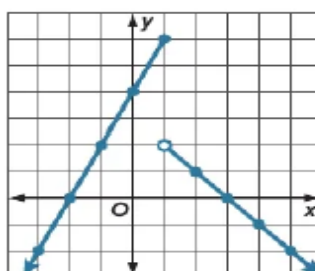
x	y
1	6
0	4
-1	2
-2	0
-3	-2



Next, graph $f(x) = -x + 3$ if $x > 1$.

- Create a table for $f(x) = -x + 3$ using values of $x > 1$.
- Because x is *greater than but not equal to* 1, place a circle at (1, 2) to indicate that the endpoint is not included in the graph.
- Then, plot the points and draw the graph beginning at (1, 2).

x	y
1	2
2	1
3	0
4	-1
5	-2



18. **STRUCTURE** Suppose $f(x) = 2\llbracket x - 1 \rrbracket$.

a. Find $f(1.5)$.

b. Find $f(2.2)$.

c. Find $f(9.7)$.

d. Find $f(-1.25)$.

12) Translate sentences into equations

Pag 71 Q (9-140)

Lesson 2-1

Writing and Interpreting Equations

Translate each sentence into an equation or formula.

9. Twice a increased by the cube of a equals b .
10. Seven less than the sum of p and t is as much as 6.
11. The sum of x and its square is equal to y times z .
12. Four times the sum of f and g is identical to six times g .
13. The area A of a square is the length of a side ℓ squared.
14. The perimeter P of a triangle is equal to the sum of the lengths of sides a , b , and c .

13) Solve absolute value expressions

PAG 106 Q (19-21)

Lesson 2-5

Solving Equations Involving Absolute Value

19. **ENGINEERING** *Tolerance* is an allowance made for imperfections in a manufactured object. The manufacturer of an oven specifies a temperature tolerance of $\pm 15^{\circ}\text{F}$. This means that the temperature inside the oven will be within 15°F of the temperature to which it is set. Write and solve an absolute value equation to find the maximum and minimum temperatures inside the oven when the thermostat is set to 400°F .
20. **POLLS** Candidate A and Candidate B are running for mayor. A poll was taken to determine which candidate would likely win the election. The poll is accurate within $\pm 5\%$. Write and solve an absolute value equation to find the maximum and minimum percent of voters who will vote for Candidate A if 38% of the voters in the poll voted for Candidate A.
21. **STATISTICS** The most familiar statistical measure is the arithmetic mean, or average. A second important statistical measure is the standard deviation, which is a measure of how far the data are from the mean. For example, the mean score on the Wechsler IQ test is 100 and the standard deviation is 15. This means that people within one standard deviation of the mean have IQ scores that are 15 points higher or lower than the mean.
 - a. One year, the mean mathematics score on the ACT test was 20.9 with a standard deviation of 5.3. Write an absolute value equation to find the maximum and minimum scores within one standard deviation of the mean.
 - b. What is the range of ACT mathematics scores within one standard deviation of the mean? within two standard deviations of the mean?

14) Graph and interpret linear functions.

PAG 233 check A,B,C,D,E,F PAG 236 Q (37-39)

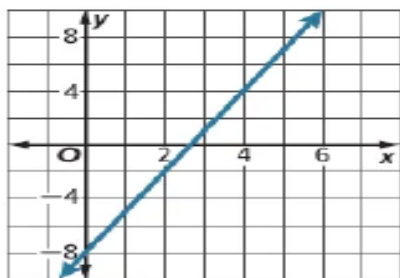
Lesson 4-3

Slope-Intercept Form

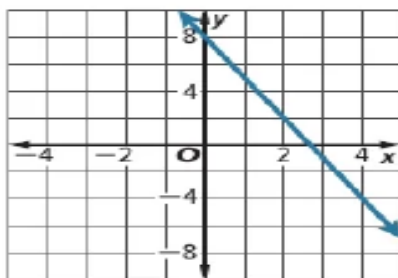
Match each graph with its equation.

$\underline{\quad ? \quad} y = 8$	$\underline{\quad ? \quad} 3x + 7y = -28$	$\underline{\quad ? \quad} y = \frac{3}{7}x - 4$
$\underline{\quad ? \quad} y = -4$	$\underline{\quad ? \quad} y = -3x + 8$	$\underline{\quad ? \quad} 3x - y = 8$

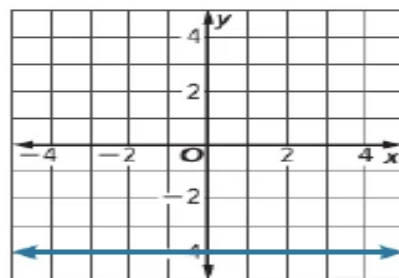
A.



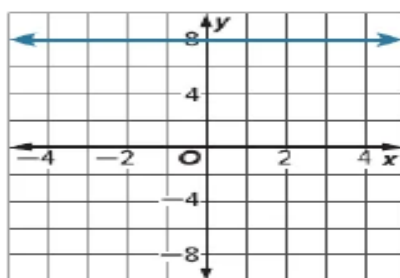
B.



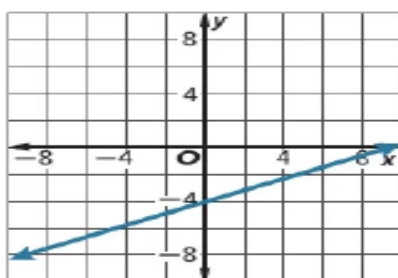
C.



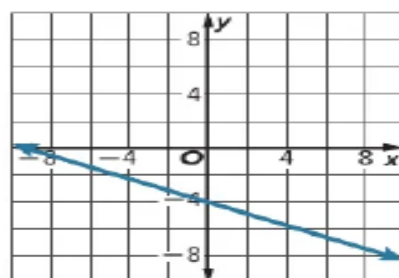
D.



E.

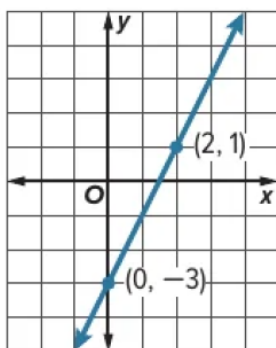


F.

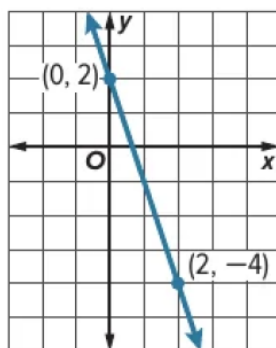


Write an equation in slope-intercept form for each graph shown.

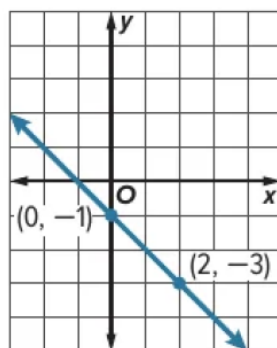
37.



38.



39.



15) Apply the arithmetic sequence formula

PAG 255 Q (19-22)

Lesson 4-5

Arithmetic Sequences

Use the given arithmetic sequence to write an equation and then find the 7th term of the sequence.

19. $-3, -8, -13, -18, \dots$

20. $-2, 3, 8, 13, \dots$

21. $-11, -15, -19, -23, \dots$

22. $-0.75, -0.5, -0.25, 0, \dots$

16) Apply translations to linear functions

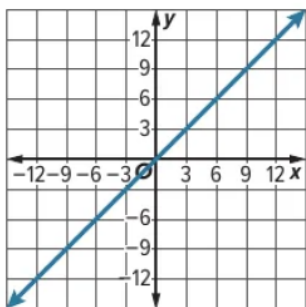
PAG 247 Q (1-6)

Lesson 4-4

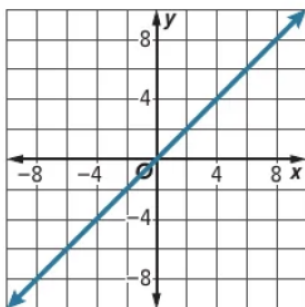
Transformations of Linear Functions

Describe the translation in each function as it relates to the graph of the parent function.

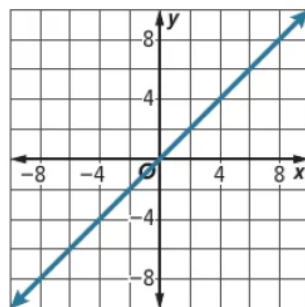
1. $g(x) = x + 11$



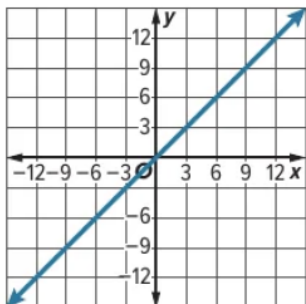
2. $g(x) = x - 8$



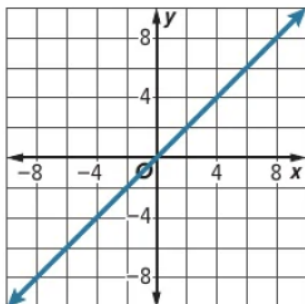
3. $g(x) = (x - 7)$



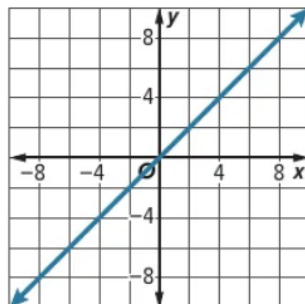
4. $g(x) = (x + 12)$



5. $g(x) = (x + 10) - 1$



6. $g(x) = (x - 9) + 5$



17) Graph the solutions of an equality

PAG 341,343 ex1,ex4 PAG 347 Q(13-20)

Lesson 6-1

Solving One-Step Inequalities

Example 1 Graph Inequalities

Graph the solution set of $y \leq 4$.



The dot at 4 shows that 4 is a solution. The heavy arrow pointing to the left shows that the solution includes all numbers less than 4.

Example 4 Solve Inequalities by Subtracting

Solve $x + 24 \geq 61$.

$$x + 24 \geq 61$$

Original inequality

$$x + 24 - 24 \geq 61 - 24$$

Subtract 24 from each side.

$$x \geq 37$$

Simplify.

The solution set is $\{x | x \geq 37\}$.

Solve each inequality.

13. $m - 4 < 3$

14. $p - 6 \geq 3$

15. $r - 8 \leq 7$

16. $t - 3 > -8$

17. $b + 2 \geq 4$

18. $13 > 18 + r$

19. $5 + c \leq 1$

20. $-23 \geq q - 30$

18) Find inverses of linear functions**PAG 332 Q (16-21)**

Lesson 5-6

Inverses of Linear Functions**Find the inverse of each function.**

16. $f(x) = 8x - 5$

17. $f(x) = 6(x + 7)$

18. $f(x) = \frac{3}{4}x + 9$

19. $f(x) = -16 + \frac{2}{5}x$

20. $f(x) = \frac{3x + 5}{4}$

21. $f(x) = \frac{-4x + 1}{5}$

19) Write an equation of a line in slope-intercept form given two points**PAG 291 Q (11-16)**

Lesson 5-1

Writing Equations in Slope-Intercept Form**Write an equation of the line that passes through each pair of points.**

11. $(0, -4), (5, -4)$

12. $(-4, -2), (4, 0)$

13. $(-2, -3), (4, 5)$

14. $(0, 1), (5, 3)$

15. $(-3, 0), (1, -6)$

16. $(1, 0), (5, -1)$

20) Solve linear inequalities by using addition

PAG 352 ex2,ex3 & PAG 354 Q (16-21)

Lesson 6-2

Solving Multi-Step Inequalities

Example 2 Write and Solve a Multi-Step Inequality

Consider the inequality *The opposite of a number divided by two minus seventeen is less than seven.*

Translate the sentence into an inequality.

$$-\frac{x}{2} - 17 < 7$$

Solve the inequality.

$$-\frac{x}{2} - 17 < 7$$

Original inequality

$$-\frac{x}{2} < 24$$

Add 17 to each side.

$$-x < 48$$

Multiply each side by 2.

$$x > -48$$

Divide each side by -1 ,
reversing the inequality symbol.

Graph the solution on a number line.



Example 3 Solve an Inequality with the Distributive Property

Solve the inequality $4(2x - 11) \leq -12 + 2(x - 4)$. Then graph the solution on a number line.

$$4(2x - 11) \leq -12 + 2(x - 4)$$

Original inequality

$$8x - 44 \leq -12 + 2x - 8$$

Distributive Property

$$8x - 44 \leq -20 + 2x$$

Simplify.

$$8x \leq 24 + 2x$$

Add 44 to each side.

$$6x \leq 24$$

Subtract $2x$ from each side.

$$x \leq 4$$

Divide each side by 6.

Graph $x \leq 4$ on a number line.



Solve each inequality. Then graph the solution on a number line.

16. $-3(7n + 3) < 6n$

17. $21 \geq 3(a - 7) + 9$

18. $2y + 4 > 2(3 + y)$

19. $3(2 - b) < 10 - 3(b - 6)$

20. $7 + t \leq 2(t + 3) + 2$

21. $8a + 2(1 - 5a) \leq 20$



Part 2

الفترة 2025-2026
الأكاديمي 2026-2027

21) Prove that equations are identities or have no solution

Pag 98 Q(25-36)

Lesson 2-4

Solving Equations with the Variable on Each Side

Solve each equation and state whether the equation has one solution, no solution, or is an identity.

25) $-6y - 3 = 3 - 6y$

26) $\frac{1}{2}(x + 6) = \frac{1}{2}x - 9$

27) $8q + 12 = 4(3 + 2q)$

28) $21(x + 1) - 6x = 15x + 21$

29) $12y + 48 - 4y = 8(y - 6)$

30) $8(z + 6) = 4(2z + 12)$

31) $2a + 2 = 3(a + 2)$

32) $\frac{1}{4}x + 5 = \frac{1}{4}x$

33) $7(c + 9) = 7c + 63$

34) $4k + 3 = (8k + 16)$

35) $3b - 13 + 4b = 7b + 1$

36) $\frac{1}{2}(\frac{1}{2}m - 8) = \frac{1}{4}(m - 16)$

22) Graph linear functions by using the x- and y-intercepts

Pag 216 Q(9-14)

Lesson 4-1

Graphing Linear Functions

Graph each equation by using the x- and y-intercepts.

9) $y = 4 + 2x$

10) $5 - y = -3x$

11) $x = 5y + 5$

12) $x + y = 4$

13) $x - y = -3$

14) $y = 8 - 6x$

19. **RECTANGLES** The formula $p = 2l + 2w$ represents the perimeter of a rectangle. In this formula, l is the length of the rectangle and w is the width.

- Solve the formula for l .
- Find the length when the width is 4 meters and the perimeter is 36 meters.

20. **BASEBALL** The formula $a = \frac{h}{b}$ can be used to find the batting average a of a batter who has h hits in b times at bat.

- Solve the formula for b .
- If a batter has a batting average of 0.325 and has 39 hits, how many times has the player been at bat?

21. **SHOPPING** Thomas went to the store to buy videogames for \$13.50 each and controllers. The total amount Thomas spent can be represented by $c = 13.50g + p$, where c is the total cost, g is the number of games he bought, and p is the cost of the controllers. The controllers cost \$55 and Thomas spent \$136 total.

- Solve the equation for g .
- Find how many games Thomas bought.

22. **GEOMETRY** The volume of a box V is given by the formula $V = lwh$, where l is the length, w is the width, and h is the height.

- Solve the formula for h .
- What is the height of a box with a volume of 50 cubic meters, length of 10 meters, and width of 2 meters?

24) Create and identify equations of parallel or perpendicular lines

Pag 304 Q(31-36)

Lesson 5-2

Writing Equations in Standard and Point-Slope Forms

Determine whether the graphs of each pair of equations are parallel, perpendicular, or neither.

31) $y = 4x + 3$
 $4x + y = 3$

32) $y = -2x$
 $2x + y = 3$

33) $3x + 5y = 10$
 $3x + 5y = 15$

34) $-3x + 4y = 8$
 $-4x + 3y = -6$

35) $2x + 5y = 15$
 $3x + 5y = 15$

36) $2x + 7y = -35$
 $4x + 14y = -42$

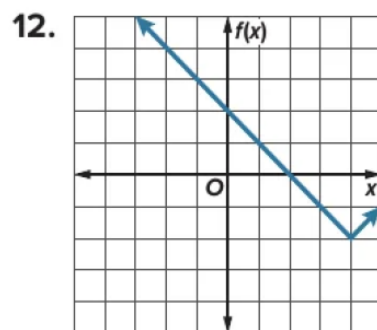
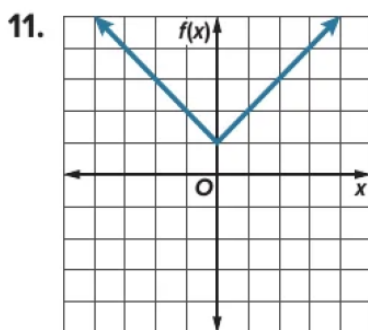
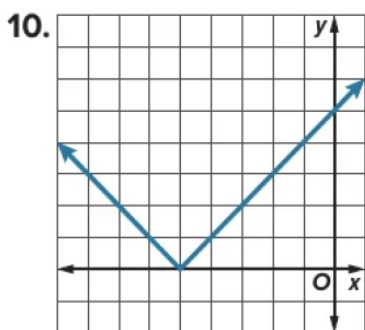
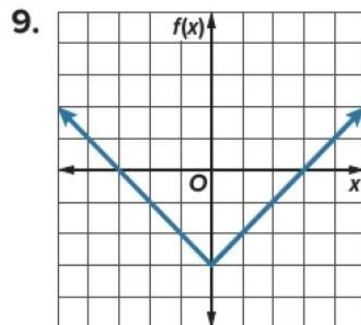
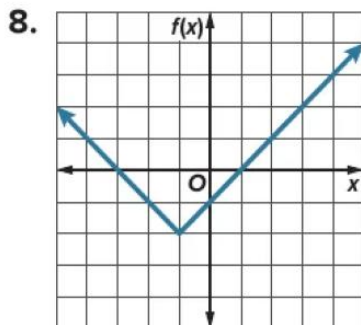
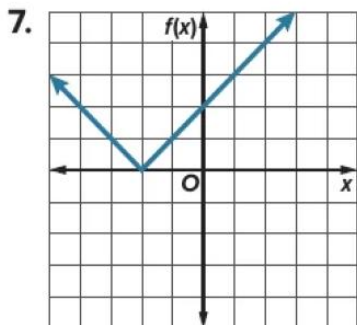
25) Calculate and interpret rate of change.
Apply translations to absolute value functions

Pag 277 Q(7-12)

Lesson 4-7

Absolute Value Functions

Use the graph of the function to write its equation.



26) Solve absolute value inequalities (>)**Pag 371 Q(7-12)**

Lesson 6-4

Solving Absolute Value Inequalities**Solve each inequality. Then graph the solution set.**

7) $|r + 2| > 6$

8) $|k - 4| > 3$

9) $|2h - 3| \geq 9$

10) $|4p + 2| \geq 10$

11) $|5v + 3| > -9$

12) $|-2c - 3| > -4$