Name Pre-Calculus Date _____

CHAPTERS 1–6

Cumulative Test

For use after Chapters 1–6

1. You buy 6 gallons of milk for \$15. What is the cost for 1 gallon of milk?

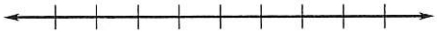
2. Evaluate $-5x^3 + 3x^2 - 8x + 2$ when $x = -2$.

3. Simplify $4(x - 3) - 5(2x + 1)$.

4. Solve the equation $4(3x - 1) = -3(2x + 8) - 7$.

5. You have two summer jobs. In the first job, you work 15 hours per week and earn \$5.80 per hour. In the second job, you earn \$6.50 per hour and can work as many hours as you want. You want to earn \$230 per week. How many hours must you work at the second job?

6. Solve $3 \leq 4x - 7 < 9$. Then graph the solution.



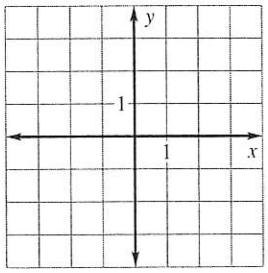
7. Solve $|9x - 3| = 42$.

8. Given the set of points $(-3, 2)$, $(5, 1)$, $(-4, 8)$, $(3, 7)$, $(0, 6)$:
   a. Identify the domain and range of the relation.
   b. Is the relation also a function?

9. Find the slope of the line passing through the points $(7, 4)$ and $(-2, 6)$. Tell whether the line *rises*, *falls*, *is horizontal*, or *is vertical*.

10. Graph $y = -\frac{3}{4} + 2$.

    Identify the slope and y-intercept.



11. Find the x- and y-intercepts of the line with equation $5x - 4y = -10$.

12. Write the equation of the line passing through the points $(-2, 5)$ and $(4, 9)$.

13. Write the equation of the line passing through $(-3, 2)$ and is (a) parallel to, and (b) perpendicular to, the line $y = 6x - 2$.

Answers

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
   See left.
7. _____
8. **a.** _____
   b. _____
9. _____
   _____
10. See left.
    _____
    _____
11. _____
12. _____
13. **a.** _____
    b. _____

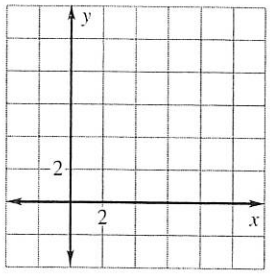
Name _____ Date _____

CHAPTERS 1–6 **Cumulative Test** *continued*

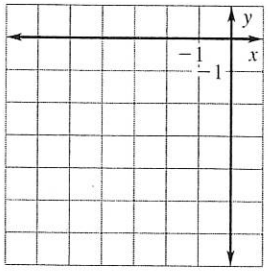
For use after Chapters 1–6

14. Draw a scatter plot of the data. Write the equation of the best-fitting line.

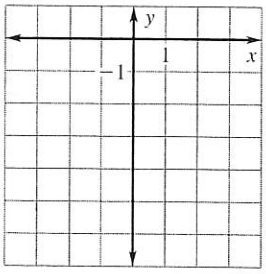
(1, 7.5), (1.5, 6), (2, 6), (3, 5), (4, 4.5), (5, 5), (6, 3), (7, 3.5), (7.5, 4), (8, 3.5)



15. Graph the function $y = -2|x + 4| - 1$. Identify the vertex.



16. Graph $2x + 3y = -9$.



17. Solve the system of equations by the elimination method.

$3x - 2y = 10$

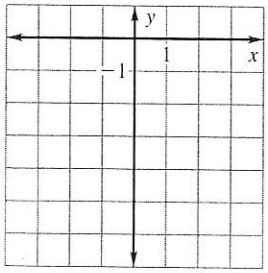
$5x + 3y = -15$

18. The drama club sold a total of 370 tickets to their spring production. Adult tickets cost \$8 each and student tickets cost \$5 each. If the amount sold was \$2540, how many adult tickets were sold?

19. Graph the system of inequalities.

$3x - 2y < 8$

$4x + y < -3$



Answers

14. See left.

15. See left.

16. See left.

17. _____

18. _____

19. See left.

Name _____ Date _____

CHAPTERS 1–6

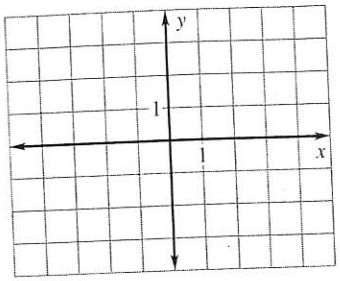
Cumulative Test *continued*

For use after Chapters 1–6

20. Solve the system graphically. Then classify the system as *consistent and independent*, *consistent and dependent*, or *inconsistent*.

$3x + 7y = -4$

$5x + 3y = 2$



21. Solve the system of three equations.

$2x - 3y + 5z = 13$

$-3x + 3y - 2z = -8$

$5x - 2y + 4z = 2$

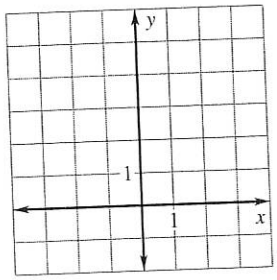
22. Multiply the matrices, if possible. $\begin{bmatrix} 4 & -2 \\ 3 & 6 \\ 1 & 0 \end{bmatrix}\begin{bmatrix} 1 & 0 & -2 \\ 4 & 5 & 3 \end{bmatrix}$

23. Evaluate the determinant of the matrix. $\begin{bmatrix} 5 & 3 & 1 \\ -2 & 4 & 2 \\ 1 & 0 & 3 \end{bmatrix}$

24. Solve the system using Cramer's Rule. $5x - 12y = 4$, $4x - 7y = -2$

25. Use an inverse matrix to solve the system. $-2x + y = -6$, $3x - 3y = 12$

26. Graph $y = 2x^2 - 4x + 1$. Identify the vertex and axis of symmetry.



27. Factor $25x^2 - 121$.

28. Solve the equation $4x^2 - 5x - 6 = 0$ by factoring.

29. Solve $5(x - 3)^2 = 75$ by finding square roots.

30. Write the product as a complex number in standard form. $(3 + 2i)(4 - 5i)$

31. Solve $x^2 - 5x + 2 = 0$ by completing the square.

Answers

20. See left.

21. _____

22. _____

23. _____

24. _____

25. _____

26. See left.

27. _____

28. _____

29. _____

30. _____

31. _____

Name _____ Date _____

CHAPTERS 1–6

Cumulative Test *continued*

For use after Chapters 1–6

32. Use the quadratic formula to solve the equation $3y^2 + 7y + 3 = 0$.

33. Solve $x^2 - 5x - 24 \leq 0$ algebraically.

34. Write the quadratic function for the parabola with vertex $(-2, 3)$ that passes through the point $(-5, 1)$.

35. Evaluate $32^{-2/5}$.

36. Evaluate $\left(\frac{-2x^3}{3y^{-2}}\right)^4$.

37. Simplify $(-3x^{-5}y^2)^{-2}$.

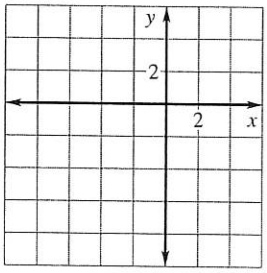
38. Multiply $(2x - 1)(3x^2 - 5x + 4)$.

39. Factor completely $7x^3 - 56$.

40. Find all the real zeros of $f(x) = x^3 - 4x^2 - 11x + 30$.

41. Divide $(x^5 - 3x^3 - 2x + 3) \div (x + 2)$.

42. Use a graphing calulator to graph $f(x) = x^3 + 5x^2 + 2x - 8$. Identify the x-intercepts and the points where the local maximums and local minimums occur.

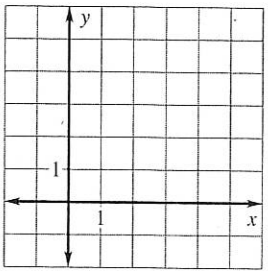


43. Simplify $\sqrt[4]{81x^6y^8}$.

44. Find $f(g(4))$ if $f(x) = 3x - 5$ and $g(x) = 7x - 1$.

45. Write the equation for the inverse of $y = \frac{2}{3}x + 1$.

46. Graph $y = 2\sqrt{x}$. State the domain and range.



47. Solve $3x^{3/4} = 375$.

48. Solve $x - 5 = \sqrt{16x}$.

Answers

32. _____

33. _____

34. _____

35. _____

36. _____

37. _____

38. _____

39. _____

40. _____

41. _____

42. See left.

43. _____

44. _____

45. _____

46. See left.

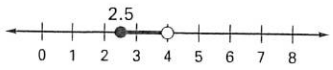
47. _____

48. _____

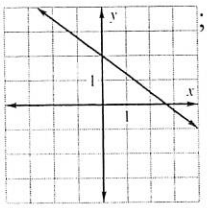
Chapters 1–6

Cumulative Test

1. \$2.50 **2.** 70 **3.** $-6x - 17$ **4.** -1.5 **5.** 22 h

6. $2.5 \le x < 4$; 

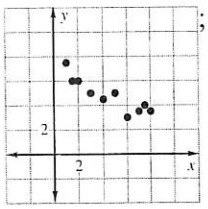
7. $5, -\frac{13}{3}$ **8. a.** domain: $-4, -3, 0, 3, 5,$ range: 1, 2, 6, 7, 8 **b.** yes **9.** $-\frac{2}{9}$, falls

10. 

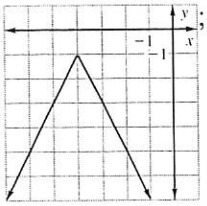
; $m = -\frac{3}{4}$, $b = 2$

11. $(-2, 0), (0, 2.5)$ **12.** $y = \frac{2}{3}x + \frac{19}{3}$

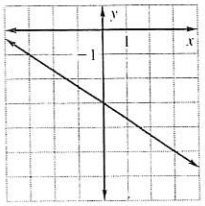
13. a. $y = 6x + 20$ **b.** $y = -\frac{1}{6}x + \frac{3}{2}$

14. 

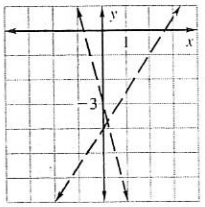
; $y = -\frac{2}{3}x + 8$

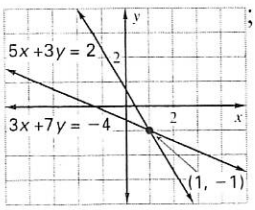
15. 

; vertex: $(-4, -1)$

16. 

17. $(0, -5)$ **18.** 230

19. 

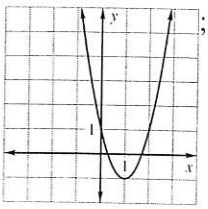
20. 

; consistent and independent

21. $(-2, -4, 1)$

22. $\begin{bmatrix} -4 & -10 & -14 \\ 27 & 30 & 12 \\ 1 & 0 & -2 \end{bmatrix}$

23. 80 **24.** $(-4, -2)$ **25.** $(2, -2)$

26. 

; vertex: $(1, -1)$, axis of symmetry: $x = 1$

27. $(5x + 11)(5x - 11)$ **28.** $-2, \frac{3}{4}$

29. $3 \pm \sqrt{15}$ **30.** $22 - 7i$ **31.** $\frac{5 \pm \sqrt{17}}{2}$

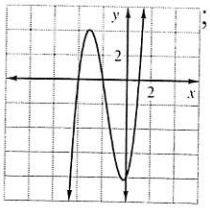
32. $\frac{-7 \pm \sqrt{13}}{6}$ **33.** $-3 \le x \le 8$

34. $y = -\frac{2}{9}(x + 2)^2 + 3$ **35.** $\frac{1}{4}$ **36.** $\frac{16x^{12}y^8}{81}$

37. $\frac{x^{10}}{9y^4}$ **38.** $6x^3 - 13x^2 + 13x - 4$

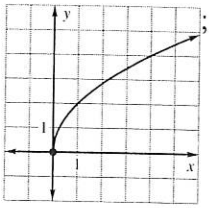
39. $7(x - 2)(x^2 + 2x + 4)$ **40.** $5, -3, 2$

41. $x^4 - 2x^3 + x^2 - 2x + 2 - \frac{1}{x + 2}$

42. 

; x-intercepts: $(-4, 0)$, $(-2, 0)$, $(1, 0)$; maximum: $(-3.12, 4.06)$; minimum: $(-0.21, -8.21)$

43. $3xy^2\sqrt{x}$ **44.** 76 **45.** $y = \frac{3}{2}x - \frac{3}{2}$

46. 

; domain: $x \ge 0$, range: $y \ge 0$

47. 625 **48.** 25