Algebra 2 – First Semester Pre-Test

1. Which of the following should not be considered a possible factor of $3x^2 - 2x - 8$?
   - A. $3x + 1$
   - B. $x - 4$
   - C. $4x + 2$
   - D. $3x - 2$

2. Multiply: $(x^3 + 2x^2 - 3x)(2x - 5) =$
   - A. $2x^4 + 9x^3 - 16x^2 + 15x$
   - B. $2x^4 - x^3 - 16x^2 + 15x$
   - C. $2x^4 + 9x^3 + 16x^2 + 15x$
   - D. $2x^4 - x^3 - 16x^2 - 15x$

3. Solve for x: $3x^2 - 6 = 21$
   - A. ± 3
   - B. 3
   - C. ± 9
   - D 9

4. Give the vertex of the parabola: $y = x^2 + 3$
   - A. (0,0)
   - B. (3,0)
   - C. (0,3)
   - D. (1,3)

5. Find the distance between the following points: (-1,8) and (2,4)
   - A. 5
   - B. 25
   - C. 6
   - D. 14

6. Which of the following is the slope-intercept form of the equation passing through (2,7) and (-1,10)?
   - A. $y = -x + 9$
   - B. $y = x + 9$
   - C. $y = 3x + 1$
   - D. $y = 3x + 13$

7. Find the point of intersection of the two lines: $\begin{cases} 4x+2y=3 \\ x-2y=12 \end{cases}$

A. $(4,-4)$
B. $(3,-9/2)$
C. $(-3,15/2)$
D. $(3,4.5)$

8. Which line is perpendicular to the line: $y=2x+3$

A. $y=-\frac{1}{2}x+1$
B. $y=2x-3$
C. $y=\frac{1}{2}x+3$
D. $y=-2x-3$

9. Which statement is true about the two lines: $\begin{cases} 3x-2y=6 \\ -3x+2y=6 \end{cases}$

A. The two lines intersect in exactly one point.
B. The two lines are actually the same line.
C. The two lines are parallel.
D. The two lines are perpendicular.

10. Evaluate 5v +3w for v = -5 and w = 2.

A. 31
B. 8
C. -3
D. -19

11. Find the slope of the line passing through (-7,-1) and (-6,5).

A. 6
B. -4/13
C. 1/6
D -13/4

12. Choose the equation of the line that is perpendicular to the given line and passes through the given point. x + y = 10 at (1,-3)

A. y = -x – 2
B. y = -x + 4
C. y = x + 2
D. y = x – 4

13. Solve the following inequality: $5-2x>-3$

A. $x>4$
B. $x>-4$
C. $x<4$
D. $x<-4$

14. Expand by multiplying: $(x-3y)^2$

A. x^2-9y^2
B. x^2+9y^2
C. $x^2-6xy+9y^2$
D. $x^2+6xy+9y^2$

15. Solve the linear system: $-3x-4y=8$
$-2x-2y=6$

A. (-4,1)
B. (-5,5)
C. (-3,2)
D. No Solution
E. Infinitely many solutions

16. Put in scientific notation: 0.0312

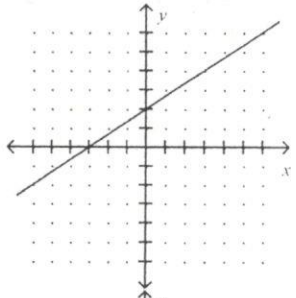
A. 312×10^{-4}
B. 3.12×10^{-4}
C. 3.12×10^{2}
D. 3.12×10^{-2}

17. Mr. Sorenson bought 5 tickets to a puppet show and spent $22. He bought a combination of child tickets for $2 each and adult tickets for $8 each. Which system of equations below will determine the number of adult tickets, a, and the number of child tickets, c, he bought?

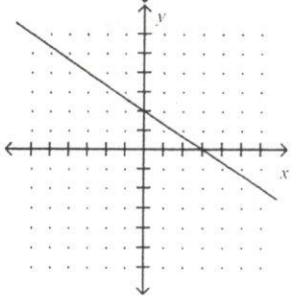
A. $8a+2c=22$
$a+c=5$
B. $a=c-8$
$8a+2c=22$
C. $2a+8c=5$
$a+c=22$
D. $a+c=110$
$a+c=5$

18. Graph the linear equation by finding x and y intercepts. $2x - 3y = -6$

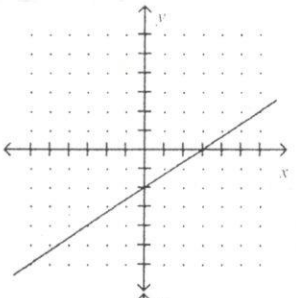
a.



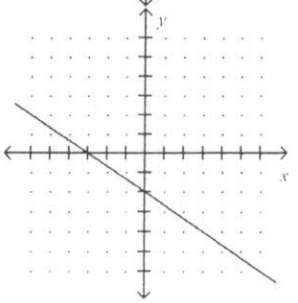
b.



c.

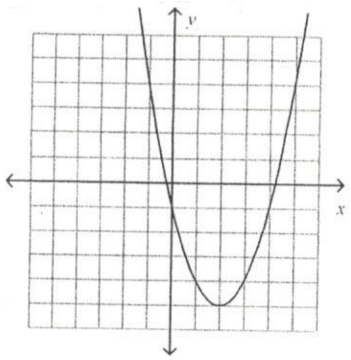


d.



19. Graph: $y = (x + 2)^2 - 5$

a.



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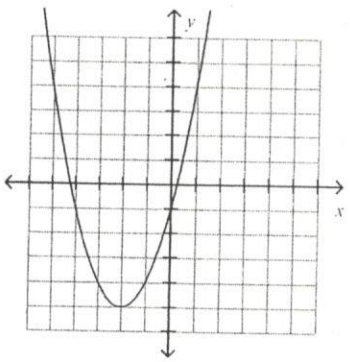
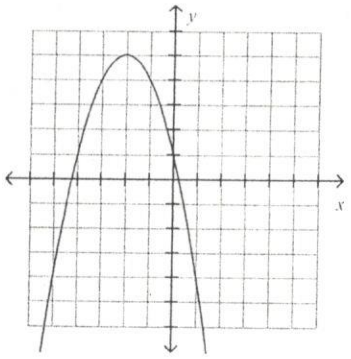
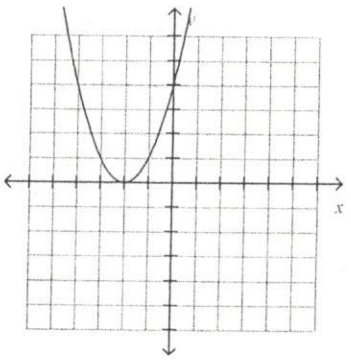


c.



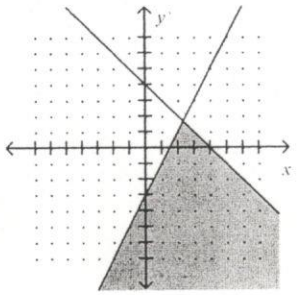
d.



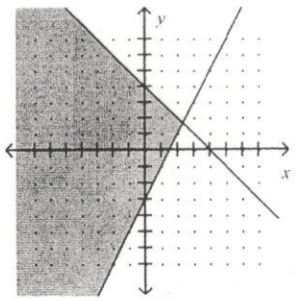
20. Graph the system of inequalities.

$y \le -x + 4$
$y \ge 2x - 3$

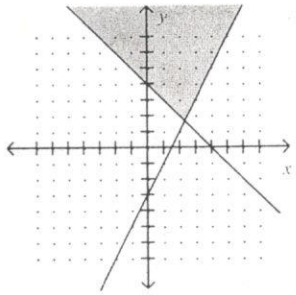
a.



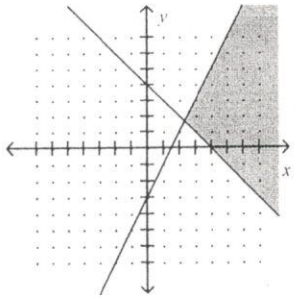
b.



c.



d.



21. Solve for x: $2x^2 - 8x = 0$

A. 4
B. ± 2
C. 0, 2
D. 0, 4

22. Solve for x: $3|x-1|+2=8$

A. 3
B. 1, 3
C. $-1, 3$
D. $-1, -3$

23. Give the equation of the line which passes through (3,1) and (-2,4).

A. $y-1=-\frac{3}{5}(x-3)$

B. $y-1=-\frac{3}{5}(x-4)$

C. $y-1=-\frac{5}{3}(x-3)$

D. $y-3=-\frac{5}{3}(x-1)$

24. Which equation describes the line parallel to: $y = 3x + 2$ and containing the point (0,1)?

A. $y=\frac{1}{3}x+1$

B. $y=\frac{1}{3}x+2$

C. $y=3x+2$

D. $y-1=3(x-0)$

25. The length of a rectangle is twice as long as the width. Find the length if the area of the rectangle is 32 square meters.

A. 4

B. 8

C. 16

D. 32

26. Evaluate the function at the given value: $f(n) = n^4 + 9n^3 + 22n^2 + 6n$ at $n = -4$

A. -11

B. 1

C. 8

D. 11

27. Evaluate the function at the given value: $f(a) = a^3 - 4a^2 - 18a - 4$ at $a = -2$

A. -3

B. -5

C. 0

D. 8

28. Simplify: $(1 + 4i) - (3 - 8i)$

A. $-2 + 12i$

B. $-4 + 12i$

C. $12i$

D. $-1 + 12$

29. Simplify: $(6 + 4i)(4 + i)$

A. $44 + 11i$
B. $-20 + 22i$
C. $18 + 12i$
D. $20 + 22i$

30. Write in standard form: $y = -(x - 2)^2 - 2$

A. $y = -x^2 - 4x + 6$
B. $y = -x^2 + 4x + 6$
C. $y = -x^2 + 4x - 6$
D. $y = -x^2 - 4x - 6$

Answers to Algebra 2 First Semester Pre-test

1. C
2. B
3. A
4. C
5. A
6. A
7. B
8. A
9. C
10. D
11. A
12. D
13. C
14. C
15. A
16. D
17. A
18. A
19. B
20. B
21. D
22. C
23. A
24. D
25. B
26. C
27. D
28. A
29. D
30. C

70% of 30 problems = 21 or more problems correct