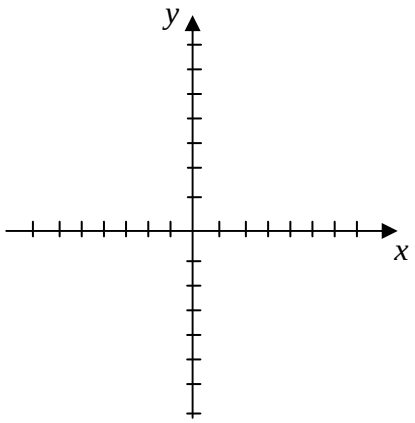
1. Plot the points $A(1,-2)$, $B(-3,-2)$, and $C(-3,4)$ on the set of axes below and connect them (in order) with straight segments. Find the area of the resulting figure.



A. 24 units^2

B. $4\sqrt{5}$ units^2

C. 12 units^2

D. $3\sqrt{5}$ units^2

E. None of the above

2. Express the following in the form $a+bi$, where a and b are real numbers.

$$(-3+4i)(2-5i)$$

A. $-6-3i$

B. $-26+23i$

C. $14-3i$

D. $14+23i$

E. None of the above

3. Which of the following statements are true given the points $A(3,1)$ and $B(4,-5)$?

I. The distance between A and B is $\sqrt{37}$.

II. The slope of segment AB is -6.

III. The midpoint of segment AB is in quadrant II.

A. I only

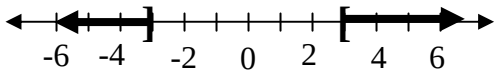
B. I and II only

C. II only

D. II and III only

E. I, II, and III are true

4. Express the following graph as an inequality involving an absolute value.



A. $|x| < 3$

B. $|x| > 3$

C. $|x| \le 3$

D. $|x| \ge 3$

E. Not enough information is given.

5. Temperature readings on the Fahrenheit (F) and Celsius (C) scales are related by the formula $C = \frac{5}{9}(F - 32)$. What values of F correspond to the values of C such that $15 < C < 50$?

A. $84.6 < F < 147.6$

B. $59.0 < F < 122.0$

C $26.1 < F < 45.6$

D. $40.3 < F < 77.6$

E. None of the above

6. Find all solutions of the following equation:

$$4x^4 - 11x^2 - 3 = 0$$

A. $x = \pm\frac{1}{2}i, \quad x = \pm\sqrt{3}$

B. $x = \pm\frac{7}{2}i, \quad x = \pm\sqrt{3}$

C. $x = \pm\frac{1}{2}, \quad x = \pm\sqrt{3}\,i$

D. $x = \pm\frac{7}{2}, \quad x = \pm\sqrt{3}\,i$

E. There are no solutions.

7. Find an equation of the line through the point $A(-3,5)$ and parallel to the line $2x+y=5$. Leave your answer in general form.

A. $-3x+5y=5$

B. $2x+y=13$

C. $2x+y=-1$

D. $-3x+5y=-1$

E. $2x+y=7$

8. Solve for x. Choose the answer that best describes the solution(s).

$$\sqrt{3x+18}=x$$

A. There is one solution.
It is greater than 5.

B. There is one solution.
It is less than 5.

C. There are two solutions.
They are both positive.

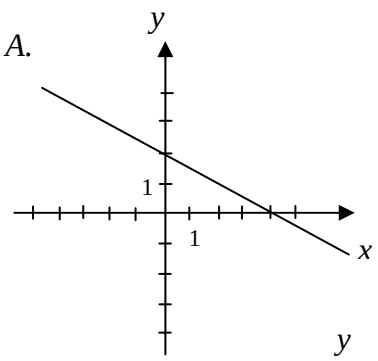
D. There are two solutions.
They are both negative.

E. There are two solutions.
One is positive and one is negative.

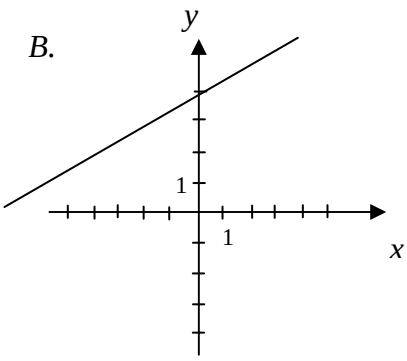
9. Which of the following depicts the graph of the following equation:

$$x-2y=4$$

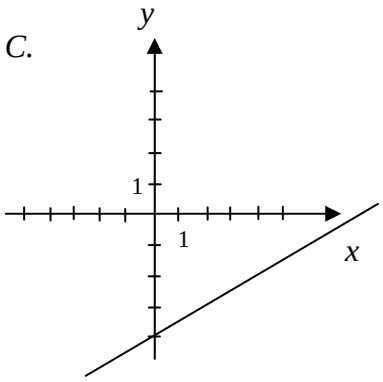
A.



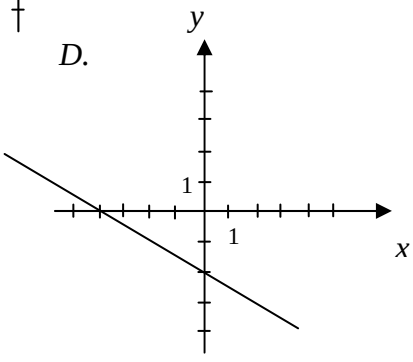
B.



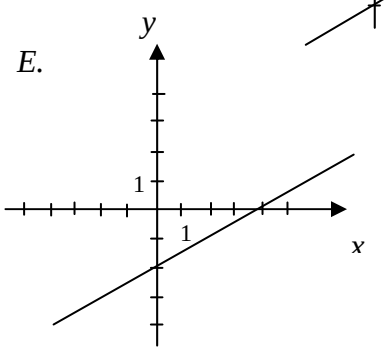
C.



D.



E.



10. The graph of the equation $x = -\sqrt{36 - y^2}$ is a half circle with center $C(0,0)$ and radius 6. Specify which half of the circle is represented by this equation.

A. Left half

B. Right half

C. Upper half

D. Lower half

E. Not enough information given.

11. Find the standard equation of the circle with center $C(-5,1)$ and passing through $A(-2,3)$

A. $(x-5)^2 + (y+1)^2 = 65$

B. $(x+5)^2 + (y-1)^2 = 13$

C. $(x-5)^2 + (y+1)^2 = 13$

D. $(x+5)^2 + (y-1)^2 = 65$

E. None of the above

12. Find the center and the radius of the circle given by

$$x^2 + y^2 + 6x - 12y + 25 = 0$$

A. Center $(3,-6)$; $r = 2\sqrt{5}$

B. Center $(-3,6)$; $r = 20$

C. Center $(3,-6)$; $r = 20$

D. Center $(-3,6)$; $r = 2\sqrt{5}$

E. Center $(-3,-6)$; $r = 2\sqrt{5}$

13. The time required for a pendulum to complete one round trip of motion is given by $T = 2\pi\sqrt{\frac{g}{32}}$.

Solve the formula for *g*. Assume all variables represent positive quantities.

A. $g = \frac{16T^2}{\pi}$

B. $g = 128\pi^2 T$

C. $g = \frac{8T^2}{\pi^2}$

D. $g = \frac{128T}{\pi^2}$

E. Cannot be solved for *g*

14. A local fitness club is gaining members at a constant rate since its grand opening. There were 75 members when the club opened and after 28 days, there were 271 members. Assume the relationship between the number of members, *N*, and the number of days since the grand opening, *t*, is linear. Express *N* in terms of *t*.

A. $N = 7t + 75$

B. $N = 7t - 525$

C. $N = \frac{1}{7}t - \frac{75}{7}$

D. $N = 7t + 271$

E. $N = \frac{1}{7}t + 75$

15. Two cars leave the same intersection at 10 am. One travels north at a constant rate of 35 mph and the other travels east at a constant rate of 30 mph. At approximately what time will the two cars be 100 miles apart?

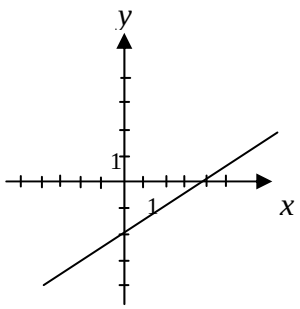
A. 10:53 a.m.

B. 12:10 p.m.

C. 2:42 p.m.

D. 1:15 p.m.

E. 12:46 p.m.

Question #	**Green Form** Fall 2006	**Answer**
1	C	12 units^2
2	D	$14+23i$
3	B	I and II only
4	D	$\lvert x\rvert \geq 3$
5	B	$59.0 < F < 122.0$
6	A	$x = \pm\frac{1}{2}i, \quad x = \pm\sqrt{3}$
7	C	$2x + y = -1$
8	A	There is one solution. It is greater than 5.
9	E	
10	A	Left Half
11	B	$(x+5)^2 + (y-1)^2 = 13$
12	D	Center $(-3, 6)$; $r = 2\sqrt{5}$
13	C	$g = \frac{8T^2}{\pi^2}$
14	A	$N = 7t + 75$
15	B	12:10 p.m.