1. Find the distance between the points $A(-5,6)$ and $B(2,8)$.

A. 9

B. $\sqrt{13}$

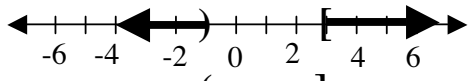
C. $\sqrt{205}$

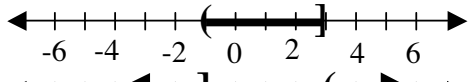
D. $\sqrt{53}$

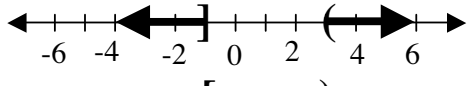
E. None of the above

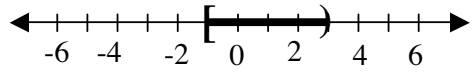
2. Which of the following depicts the solution to the following inequality?

$$-4 < 3x - 1 \le 8$$

A.


B.


C.


D.


E. None of the above

3. Solve for x.

$$x^4 + 5x^2 - 36 = 0$$

A. $x = \pm 3i, \quad x = \pm 2$

B. $x = \pm 3i, \quad x = \pm 2i$

C. $x = \pm 3, \quad x = \pm 2i$

D. $x = \pm 3, \quad x = \pm 2$

E. None of the above

4. Given the function, $f(x) = x^2 - 3x + 1$, find and simplify $\dfrac{f(a+h) - f(a)}{h}$. Assume that $h \quad 0$.

A. $h - 3$

B. $\dfrac{h^2 - 6a - 3h + 2}{h}$

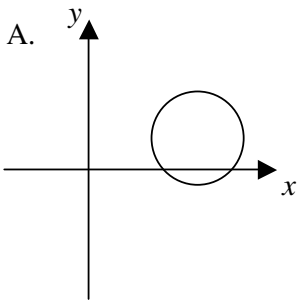
C. $2a + h - 3$

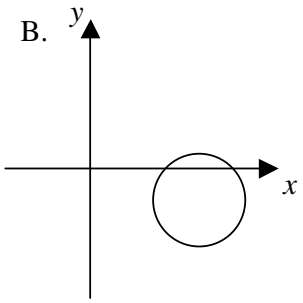
D. $2a - 3$

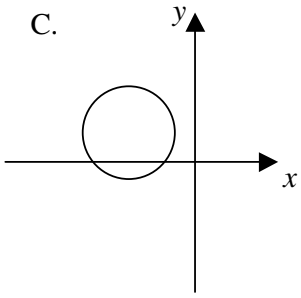
E. None of the above

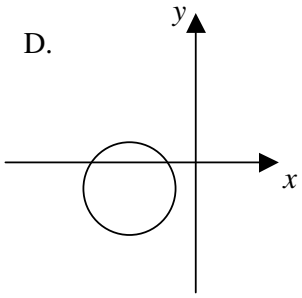
5. Which of the following depicts the graph of the equation:

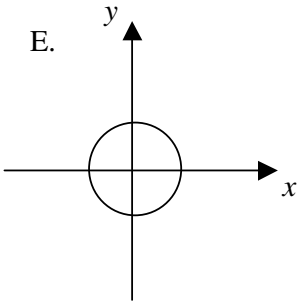
$$x^2 + y^2 - 8x + 4y + 11 = 0$$

A. 

B. 

C. 

D. 

E. 

6. Choose the answer that expresses the inequality given below. Do not solve.

$$|3x + 8| \geq 7$$

A. $-7 \leq 3x + 8 \leq 7$

B. $3x + 8 \geq 7$

C. $3x + 8 \geq -7$ or $3x + 8 \leq 7$

D. $3x + 8 \leq -7$ or $3x + 8 \geq 7$

E. None of the above

7. Find an equation of the line through the points $A(4,5)$ and $B(-3,2)$. Leave your answer in the form $ax + by = c$, where a, b, and c are integers and a is positive.

A. $7x - 3y = 23$

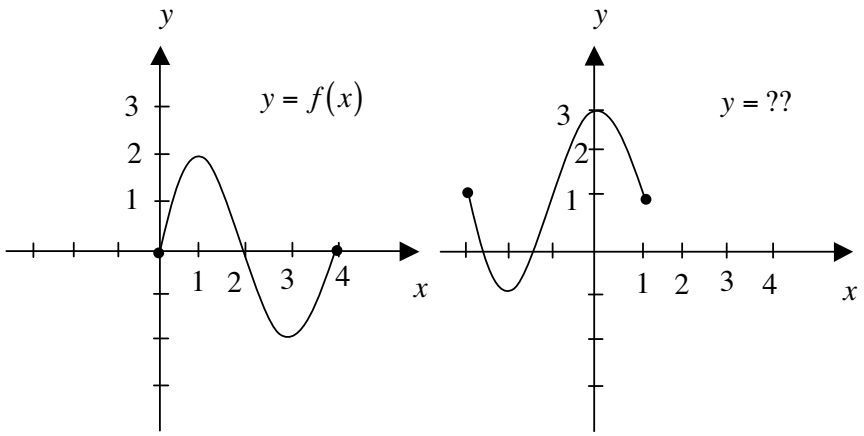
B. $3x - 7y = -13$

C. $3x + 7y = -15$

D. $7x - 3y = 13$

E. $3x - 7y = -23$

8. The graph of a function, $y = f(x)$, with domain $[0,4]$ is shown on the left. The graph on the right was obtained by applying graphical transformations to $y = f(x)$. Which of the following equations corresponds to the graph on the right?



A. $y = -f(x+3)+1$

B. $y = f(-x-3)+1$

C. $y = f(x-3)-1$

D. $y = -f(x-3)+1$

E. $y = f(-x+3)+1$

9. Find the slope of a line perpendicular to the line given by the equation:

$$5x + 3y = 20$$

A. $-\frac{3}{5}$

B. $\frac{20}{3}$

C. $-\frac{3}{20}$

D. $-\frac{5}{3}$

E. None of the above

10. Solve for x. Simplify your answer.

$$x^2 - 6x + 11 = 0$$

A. $x = 3 \pm 4\sqrt{5}$

B. $x = 3 \pm \sqrt{2}i$

C. $x = 3 \pm 2\sqrt{5}$

D. $x = 3 \pm 6\sqrt{11}i$

E. $x = 3 \pm 2\sqrt{2}i$

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

$$x+1+\frac{x+2}{x-1}=\frac{3}{x-1}$$

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

B. There is one solution.
It is positive.

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

D. There is one solution.
It is negative.

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

12. Find the domain of the following function. Express your answer in interval notation.

$$g(x)=\frac{\sqrt{x+5}}{x^2-36}$$

A. $[-5,6)\cup(6,\infty)$

B. $[-5,\infty)$

C. $(-\infty,-6)\cup(-6,-5]$

D. $(-\infty,-6)\cup(-6,6)\cup(6,\infty)$

E. None of the above

13. It takes a girl 4 hours to do a job alone. Her brother can do the same job alone in 3 hours. To the nearest tenth of an hour, low long would it take them to do the job working together?

A. 1.7 hours

B. 3.5 hours

C. 1.0 hours

D. 0.6 hours

E. None of the above

14. A tightrope walker is attempting to walk between two poles of differing heights that are 30 feet away from each other. The shorter pole is 20 feet tall and the height of the taller pole is x feet tall. Express the length, L, of the tightrope as a function of x. Simplify your answer.

A. $L(x) = x + 50$

B. $L(x) = \sqrt{x^2 - 40x + 1300}$

C. $L(x) = \sqrt{x^2 + 900}$

D. $L(x) = \sqrt{x^2 - 60x + 1300}$

E. $L(x) = 15x + 300$

15. A square garden is to be tilled and enclosed with a fence. The fence costs \$3 per foot and the cost of preparing the soil is \$2 per square foot. The total cost is to be \$150. If x represents the length of a side of the garden, find the equation that would be used to solve for x. Simplify your equation but do not solve.

A. $x^2 + 4x - 150 = 0$

B. $2x - 15 = 0$

C. $3x^2 + 8x - 150 = 0$

D. $x^2 + 6x - 75 = 0$

E. $2x^2 + 3x - 150 = 0$