1. Find the distance between the points $A(6,-1)$ and $B(-4,5)$.

A. $2\sqrt{17}$

B. $2\sqrt{5}$

C. $2\sqrt{10}$

D. $2\sqrt{34}$

E. $2\sqrt{29}$

2. Find the *x*- and *y*- intercept(s) of the graph given by the equation $y=\sqrt{x+4}$.

A. No $x-$intercept; $(0,-2)$ and $(0,2)$

B. $(-4,0)$; $(0,2)$

C. $(-4,0)$; $(0,-2)$ and $(0,2)$

D. $(-4,0)$; No $y-$intercept

E. No $x-$intercept; $(0,2)$

3. Which of the following is (are) true?

I. The lines $y=-2x+1$ and $y=\frac{1}{2}x-4$ are perpendicular to each other.

II. The slope of the line containing the points $A(-3,2)$ and $B(-5,-1)$ is $-\frac{3}{2}$.

III. The slope of the line given by $4x+3y=9$ is $-\frac{4}{3}$.

A. I only

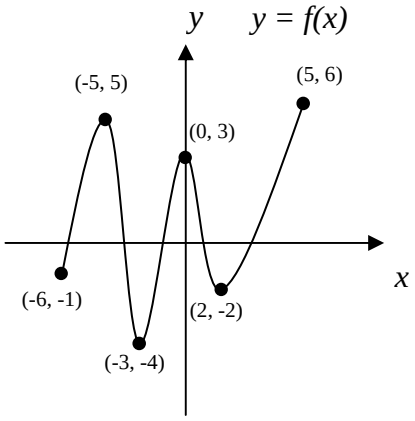
B. II and III only

C. I and III only

D. I, II, and III

E. None are true.

4. Use the graph of the function, *y=f(x)*, given below, to find $f(5)$ and the range, *R*.



A. $f(5)=6;\quad R=[-4,6]$

B. $f(5)=-5;\quad R=[-4,6]$

C. $f(5)=6;\quad R=[-6,5]$

D. $f(5)=-5;\quad R=[-6,5]$

E. Not enough information given.

5. Solve for x. Simplify your answer.

$$2x^2+4x+7=0$$

A. $x=-1\pm\sqrt{10}\,i$

B. $x=-4\pm 4\sqrt{7}\,i$

C. $x=-4\pm\frac{\sqrt{10}}{2}i$

D. $x=-1\pm 2\sqrt{10}\,i$

E. $x=-1\pm\frac{\sqrt{10}}{2}i$

6. Solve for x. Choose the answer that best describes the solution.

$$\frac{8}{x^2}-\frac{6}{x}+1=0$$

A. There is one solution.
It is positive.

B. There is one solution.
It is negative.

C. There are two solutions.
Both are positive.

D. There are two solutions.
Both are negative.

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

7. Which of the following is (are) true?

I. $x \le 5$ is written as $(-\infty, 5]$ in interval notation.

II. The solution of $2x < 5x + 9$ is $x < -3$.

III. The solution of $|x + 5| \ge 2$ is $[-7, -3]$ in interval notation.

A. I only
B. I and II only
C. I and III only
D. II and III only
E. I, II, and III

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

$$x = 5 + \sqrt{x - 3}$$

A. There is one solution. It is positive.
B. There is one solution. It is negative.
C. There are two solutions. Both are positive.
D. There are two solutions. Both are negative.
E. There are two solutions. One is positive and one is negative.

9. Given the function, $f(x) = x^2 - 2x + 1$, find and simplify $\dfrac{f(a+h) - f(a)}{h}$ $(\text{assume } h \ne 0)$.

A. $h - 2$
B. $2a + h - 2$
C. $\dfrac{h^2 - 4a + 2}{h}$
D. $2a + h$
E. $2a - 2$

10. Find the general form of the equation of the line through the point $A(-2,4)$ and parallel to the line given by $y=\frac{1}{3}x+5$.

A. $x-3y=-15$
B. $3x+y=-2$
C. $x-3y=10$
D. $3x+y=10$
E. $x-3y=-14$

11. Find the equation of the circle whose endpoints of a diameter are $A(1,-6)$ and $B(5,2)$.

A. $(x+3)^2+(y-2)^2=20$
B. $(x-3)^2+(y+2)^2=20$
C. $(x-3)^2+(y+2)^2=80$
D. $(x+3)^2+(y-2)^2=80$
E. None of the above.

12. The point $P(-7,3)$ is on the graph of a basic function, *y=f(x)*. Find the corresponding point on the graph of $y=\frac{2}{3}f(x-4)$.

A. $\left(-11,\frac{9}{2}\right)$
B. $\left(-3,\frac{9}{2}\right)$
C. $(-3,2)$
D. $(-11,2)$
E. None of the above.

13. Dan is trying to decide between two cars to purchase. Car A costs \$16,750 and requires \$1,350 per year to maintain. Car B costs \$20,125 and requires \$750 per year to maintain. After how many years will car B begin to be more economical?

A. Between 4 and 5 years.

B. Between 5 and 6 years.

C. Between 6 and 7 years.

D. Between 7 and 8 years

E. After 8 years.

14. A square garden is to be tilled and then enclosed with a fence. The cost of the fence is \$3 per foot and the cost of preparing the soil is \$0.50 per square foot. Let x represent the length of one side of the garden. Find the equation that would be used to solve for x if the total cost is to be \$300. Simplify the equation.

A. $x^2 + 4x - 300 = 0$

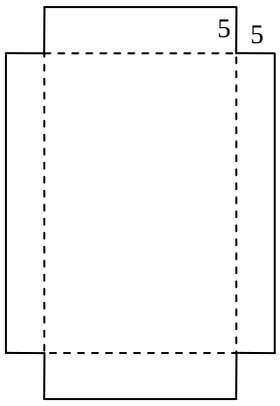
B. $7x^2 + 8x - 600 = 0$

C. $x^2 + 6x - 600 = 0$

D. $3x^2 + 2x - 300 = 0$

E. $x^2 + 24x - 600 = 0$

15. A box with an open top is to be made by cutting 5-inch squares from the corners of a rectangular piece of cardboard whose length is twice its width and then folding up the remaining flaps (see the figure). Let x represent the width of the original piece of cardboard. Express the volume, V, of the box as a function of x. Simplify the function.



A. $V(x) = 10x^2$

B. $V(x) = 2(x-5)(x-10)$

C. $V(x) = 5(2x-5)(x-5)$

D. $V(x) = 10(x-5)(x-10)$

E. Cannot be determined.