

**24HourAnswers.com**

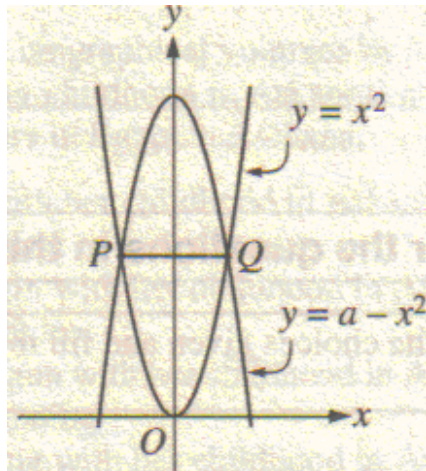
**Online Homework**

**Focused Exercises for Math SAT**

**Skill Set 24: Quadratics**

Many of the problems in this exercise set came from The College Board, writers of the SAT exam.

1.

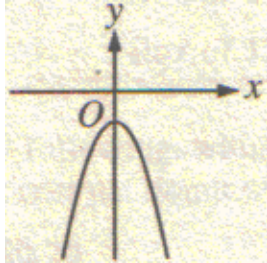


The figure above shows the graphs of  $y = x^2$  and  $y = a - x^2$  for some constant  $a$ . If the length of  $\overline{PQ}$  is equal to 6, what is the value of  $a$ ?

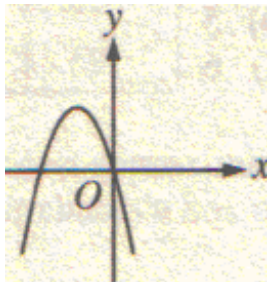
- (A) 6
- (B) 9
- (C) 12
- (D) 15
- (E) 18

2. The quadratic function  $g$  is given by  $g(x) = ax^2 + bx + c$ , where  $a$  and  $c$  are negative constants. Which of the following could be the graph of  $g$ ?

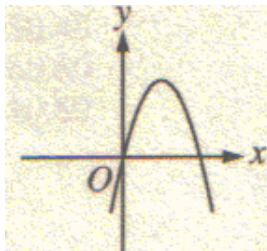
(A)



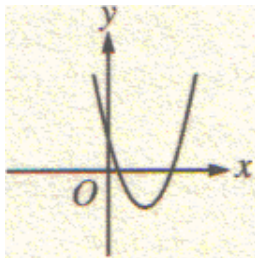
(B)



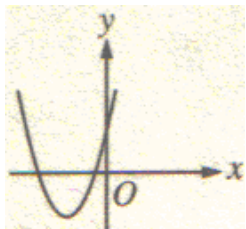
(C)



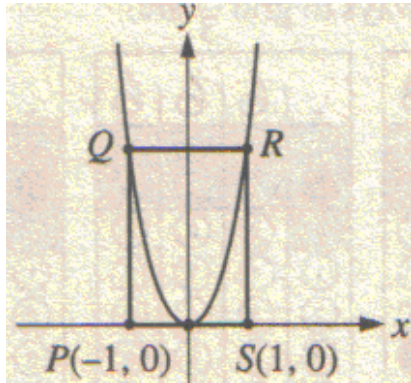
(D)



(E)



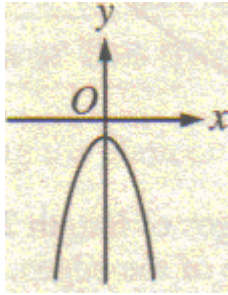
3.



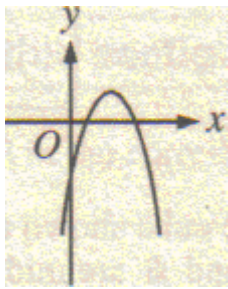
In the figure above,  $PQRS$  is a rectangle, and points  $Q$  and  $R$  lie on the graph of  $y = ax^2$ , where  $a$  is a constant. If the perimeter of  $PQRS$  is 10, what is the value of  $a$ ?

4. If the function  $f$  is defined by  $f(x) = x^2 + bx + c$  where  $b$  and  $c$  are positive constants, which of the following could be the graph of  $f$ ?

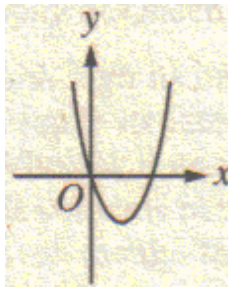
(A)



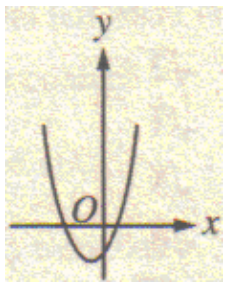
(B)



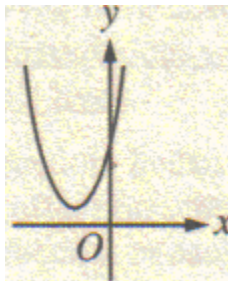
(C)



(D)



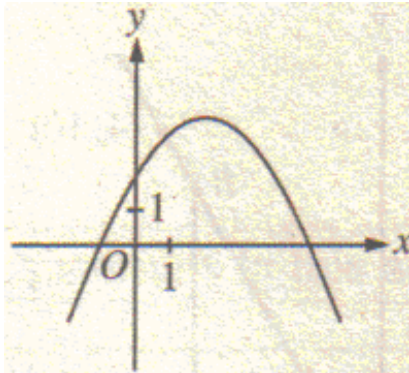
(E)



5. In the  $xy$ -coordinate system,  $(p, 0)$  is one of the points of intersection of the graphs of  $y = -x^2 + 9$  and  $y = x^2 - 9$ . If  $p$  is positive, what is the value of  $p$ ?

- (A) 3
- (B) 6
- (C) 9
- (D) 18
- (E) 81

- 6.



The figure above shows the graph of a quadratic function  $h$  whose maximum value is  $h(2)$ . If  $h(a) = 0$ , which of the following could be the value of  $a$ ?

- (A)  $-1$
  - (B)  $0$
  - (C)  $2$
  - (D)  $3$
  - (E)  $4$
7. If  $k$  and  $h$  are constants and  $x^2 + kx + 7$  is equivalent to  $(x + 1)(x + h)$ , what is the value of  $k$ ?
- (A)  $0$
  - (B)  $1$
  - (C)  $7$
  - (D)  $8$
  - (E) It cannot be determined from the information given.

8. A manager estimates that if the company charges  $p$  dollars for their new product, where  $0 \leq p \leq 200$ , then the revenue from the product will be  $r(p) = 2,000p - 10p^2$  dollars each week. According to this model, for which of the following values of  $p$  would the company's weekly revenue for the product be the greatest?

- (A) 10
- (B) 20
- (C) 50
- (D) 100
- (E) 200

9. If  $\frac{x}{3} = x^2$ , the value of  $x$  can be which of the following?

I.  $-\frac{1}{3}$

II. 0

III.  $\frac{1}{3}$

- (A) I only
- (B) II only
- (C) III only
- (D) II and III only
- (E) I, II, and III