1

$$f(x) = 5^x + 3$$

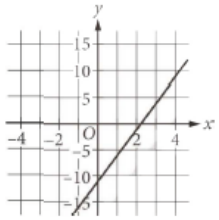
If the given function f is graphed in the xy-plane, where $y = f(x)$, what is the y-intercept of the graph?

A) (0, 3)
B) (0, 4)
C) (0, 5)
D) (0, 8)

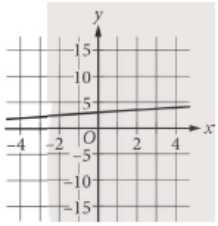
2

The function f is defined by $f(x)=mx+b$, where m and b are constants such that $m \geq 1$ and $-7 \leq b \leq 7$. Which of the following could be the graph of $y = f(x)$?

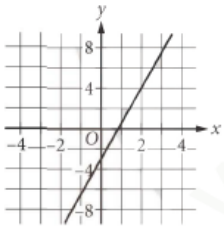
A)



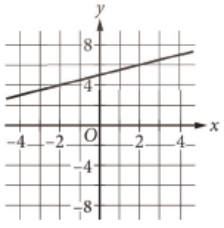
B)



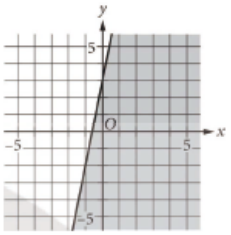
C)



D)



3



The shaded region shown represents the solutions to which inequality?

A) $y \geq -5x + 3$
B) $y \geq -3x + 5$
C) $y \leq 3x + 5$
D) $y \leq 5x + 3$

4

Which table could represent values of x and their corresponding values of $f(x)$ for a decreasing exponential function f?

A)

x	1	2	3	4
$f(x)$	1	2	4	8

B)

x	1	2	3	4
$f(x)$	8	4	2	1

C)

x	1	2	4	8
$f(x)$	1	9	17	25

D)

x	1	2	4	8
$f(x)$	25	17	9	1

5

Which equation has no solution?

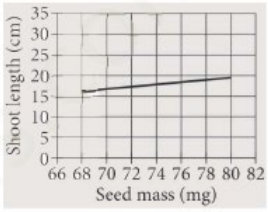
A) $x = x + 1$
B) $x = 2x + 2$
C) $x + 1 = x + 1$
D) $x + 1 = 2x + 2$

$f(x) = 0.28x - 2.9$
The given function f models the length, in centimeters (cm), of aboveground growth, known as shoot length, of cotton seedlings after emerging from seeds, where x represents the seed mass, in milligrams (mg), and $68 \leq x \leq 80$.

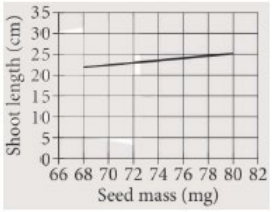
6a

Which of the following is a graph of the model?

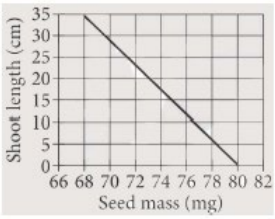
A)



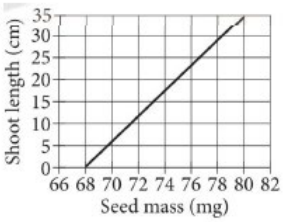
B)



C)



D)



6b

What is the best interpretation of 0.28 in this context?

A) The maximum mass of the seeds was 0.28 mg.
B) The maximum shoot length of the seedlings was 0.28 cm.
C) For every two seedlings with 1 cm difference in the shoot lengths, the estimated difference in the masses of the seeds is 0.28 mg.
D) For every two seeds with 1 mg difference in the masses, the estimated difference in the shoot lengths of the seedlings is 0.28 cm.

7

$$4x^2 + kx + 9 = 0$$

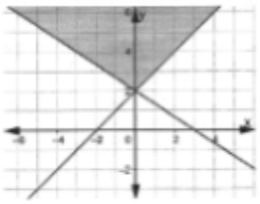
In the given equation, k is a positive constant. The equation has exactly one real solution. What is the value of k ?

8

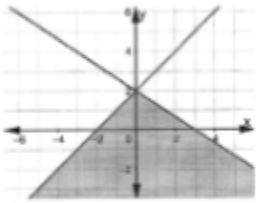
$$y \geq x + 2$$
$$2x + 3y \leq 6$$

In which of the following does the shaded region represent the solution set in the xy-plane to the system of inequalities above?

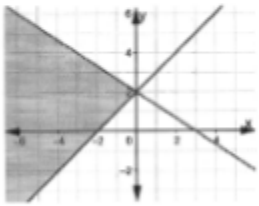
a)



b)



c)



d)