14. Which of the following is the equation of the line perpendicular to the line y = -10x + 1 , passing through the point (5,7)?

A: 1 13
---- x – y = - ----
10 2

B: 1 13
--- x + y = - -----
10 2

Yes B and C are the same for some reason.

C: 1 13
--- x + y = - -----
10 2

1 13
D: - ------ x – y = --------
10 2

Solution

y = -10x + 1 $\Rightarrow$ 10x+y-1 = 0, hence vector $\vec{N} = \{10; 1\}$ will be perpendicular to the line
y = -10x + 1.

Then vector $\vec{N} = \{10; 1\}$ is along the line L perpendicular to the line y = -10x + 1.
Besides, the line L passes through the point (5,7).
Thus, equation of line L is given by

(x-5)/10 = (y-7)/1

Answer:
A: x/10-y=-13/2.

16. How many solutions does the following system of equations have?
y = (5/2) x + 2
2y=5x + 8

A: one
B: two
C: Zero
D: Infinitely many.

Solution

y = (5/2) x + 2
2y=5x + 8
Multiply the first equation by 2
2y =5x+ 4
2y=5x + 8
Subtract the first equation from the second one and obtain
0=4,

which is false, therefore the initial system does not have a solution.
Answer:
C: Zero.

17. Assume f(x) = -2x + 8 and g(x) = 5x , what is the value of (f − g)(2)?

Solution:

(f − g)(x)=-2x + 8-5x=-7x+8
(f − g)(2)=-7*2+8= -6
Answer: -6.