10.4: (SYSTEMS OF NONLINEAR EQUATIONS)

If the system $\begin{cases} 3(x-1)^2 - 2(y+1)^2 = 19 \\ (x-1)^2 - (y+1)^2 = 5 \end{cases}$ has a solution (a, b) in the first Quadrant, then $a + b =$

A) -5

B) 1

C) 5

D) -3

E) 2

If (a, b) is a point of intersection between the curves $2^x + 2^y = 10$ and $4^x + 4^y = 68$, then $a + b =$

A) 1

B) 3

C) 2

D) 4

E) 0

If (m, n) and (p, q) are the solutions of the system of equations
$\begin{cases} 2xy + 3 = 0 \\ x + 2y = 2 \end{cases}$, then $m + n + p + q =$

A) 5

B) 1

C) 3

D) 2

E) 4

If $(a, b), a > 0$ is the solution of the system $\begin{cases} 2x - y = 4 \\ xy = 30 \end{cases}$, then $a + b =$

A) 11

B) 9

C) 8

D) 10

E) 13

The longest side of a right triangle is 29 cm in length. One of the other two sides is 1 cm longer than the shortest side. The sum of the lengths of the two shorter sides of the triangle is equal to

A) 41 cm

B) 31 cm

C) 51 cm

D) 43 cm

E) 53 cm

The solution set of the following system is

$$(x - 2)^2 + (y + 3)^2 = 20$$
$$(x - 3)^2 + (y + 2)^2 = 10$$

(a) $\{(4,1), (6, -1)\}$

(b) $\{(-4,1), (6,1)\}$

(c) $\{(2,1), (3, -1)\}$

(d) $\{(-2,1), (-3,1)\}$

(e) $\{(3, -1), (5, -2)\}$

If (a, b) is the solution of the system $\begin{cases} y = e^x - 5 \\ y = -2e^x + 1 \end{cases}$, then $e^a =$

B) -3

C) 4

D) 0

E) -2

The circle $x^2 + y^2 - 2x = 1$ and the line $2x + y = 5$ intersect at

(A) $\left(\frac{12}{5}, \frac{1}{5}\right)$ and $(2,1)$

B) $\left(\frac{3}{5}, \frac{19}{5}\right)$ and $(3, -1)$

C) $\left(\frac{1}{5}, \frac{23}{5}\right)$ and $(4, -3)$

D) $\left(\frac{3}{5}, \frac{19}{5}\right)$ and $(2,1)$

E) $\left(\frac{1}{5}, \frac{23}{5}\right)$ and $(3, -1)$

If (a, b) is the solution of the system of eq $\quad \begin{cases} \dfrac{1}{x+2} + \dfrac{1}{y} = 1 \\ \dfrac{1}{x+2} - \dfrac{1}{y} = -3 \end{cases}$ then $a + b =$

A) $\dfrac{19}{3}$

B) 6

C) $-\dfrac{5}{2}$

D) $-\dfrac{1}{2}$

E) $\dfrac{1}{5}$

If (a, b) and (c, d) are the solutions of the system $\begin{cases} (x-1)^2 + (y-2)^2 = 4 \\ \dfrac{(x-1)^2}{4} + \dfrac{(y-2)^2}{9} = 1 \end{cases}$

then $a + b + c + d =$

a) 6

b) 10

c) 12

d) 8

e) 4

The number of the solutions of the nonlinear system $\begin{cases} 3x^2 + 2xy + y^2 = 4 \\ 4x^2 + xy + y^2 = 4 \end{cases}$

is

A) 4

B) 1

C) 3

D) 2

E) 0

If (x, y) is the solution of the system $\begin{cases} y = \log(x + 1) + 3 \\ y = \log(x + 2) + 2 \end{cases}$, then $27x =$

A) -24

B) 15

C) -18

D) 36

E) -4

The number of solutions of the system of nonlinear equations

$$\begin{cases} 2x^2 - y^2 = 4 \\ x - |y| = 0 \end{cases}, \text{ is}$$

A) 2

B) 3

C) 0

D) 1

E) 4

If (m, n) and (p, q) are the solutions of the system $\begin{cases} x - y = 4 \\ xy = 12 \end{cases}$, then $m + n + p + q =$

A) 0

B) -8

C) -16

D) -10

E) -6

If (a, b) and (c, d) are the solutions of the system $\begin{cases} x^2 - 3xy + y^2 = 4 \\ x^2 - 5xy + 6y^2 = 0 \end{cases}$ then

$ac + bd =$

A) -12

B) -40

C) -10

D) -36

E) -20

The system of equations $\begin{cases} 2x^2 + 3y^2 = 5 \\ x^2 - 3y^2 = 4 \end{cases}$ has

A) one real solution

B) three real solutions

C) four real solutions

D) two real solutions

E) no real solutions

The number of solutions of the system of non-linear equations

$$\begin{cases} 4x^2 + 9y^2 = 36 \\ x^2 - y^2 = 25 \end{cases} \text{ is}$$

A) 4

B) 3

C) 2

D) 1

E) 0

If one of the solutions of the system of equations $\begin{cases} 5x + y = 3 \\ y = x^2 - 3x - 5 \end{cases}$ is (A, B)

where $A + B = -5$, then $AB =$

A) 4

B) 2

C) -7

D) 15

E) -14

The number of all solutions of the system $\begin{cases} \dfrac{4}{x^2} + \dfrac{6}{y^2} = \dfrac{7}{2} \\ \dfrac{3}{x^2} - \dfrac{6}{y^2} = 0 \end{cases}$, is

(a) 4
(b) 3
(c) 2
(d) 1
(e) 0