{ 1 } Solving two equations of first degree

Find the S. S. of the following equations :-

(1) $x - y = 4$ and $3x + 2y = 7$

(2) $x - 2y = 0$ and $2x + 3y = 7$

(3) $x = 2$ and $y = 2x - 1$

(4) $3x - y + 4 = 0$ and $y = 2x + 3$

(5) $y = x + 4$ and $x + y = 4$

(6) the sum of two rational numbers is 63 and the difference between them is 12 . find the two numbers .

{ 2 } Solving equation of second degree

[1] Solve the following equations :-

(1) $3x^2 = 5x + 4$

(2) $2x^2 - 5x + 1 = 0$

(3) $(x - 3)^2 - 5x = 0$

(4) $x^2 + 2x + 3 = 0$

(5) $2x(x - 5) = 1$

(6) $x + \frac{4}{x} + 1 = 0$

(7) $1 - \frac{2}{x} = \frac{2}{x^2}$

(2) Two complementary angles , if the measure of one of them is 30^o more than the measure of the other , find the measure of each of them .

{ 3 } Solving two equations in two variables one of first degree and the other of second degree

[1] Solve the following equations :-

(1) $y = x - 3$ and $x^2 + y^2 = 17$

(2) $x - y = 1$ and $x^2 + y^2 = 25$

(3) $x - 2y = 1$ and $x^2 - xy = 0$

(4) $x + y = 7$ and $x^2 + y^2 = 25$

(5) $x + y = 0$ and $2x^2 - y^2 = 4$

(6) $x - y = 0$ and $xy = 1$

With my best wishes Mr. Nader Madany

Story problems :-

(1) If the sum of two integer numbers is 3 , and the sum of their squares is 5 . find the two numbers .

{ 4 } Algebraic Fractional Functions and the operations on them

Find n in its simplest form , showing its domain where :

(1) n (x) = $\frac{x^2+2x+4}{x^3-8} + \frac{x^2+x-2}{x^2-4}$

(2) n (x) = $\frac{x-3}{x^2-7x+12} - \frac{4}{x^2-4x}$

(3) n (x) = $\frac{x+5}{x^2+7x+10} - \frac{x-1}{x^2+5x+6}$

(4) n (x) = $\frac{x^2-2x}{x^2-3x+2} - \frac{4-x^2}{x^2+x-2}$

(5) n (x) = $\frac{x^2-2x}{x^2-4} + \frac{2x+6}{x^2+5x+6}$

(6) n (x) = $\frac{x^2-x}{x^2-1} + \frac{x+5}{x^2-6x+5}$

(7) n (x) = $\frac{x^2+2x+4}{x^3-8} - \frac{9-x^2}{x^2+x-6}$

(8) n (x) = $\frac{x^2-3x}{x^2-9} \div \frac{2x}{x+3}$

(9) n (x) = $\frac{x^2-3x+2}{x^2-1} \div \frac{3x-15}{x^2-4x-5}$

(10) n (x) = $\frac{x^3-8}{x^2+x-6} \times \frac{x+3}{x^2+2x+4}$

(11) n (x) = $\frac{x^3-8}{x^3-7x^2+10x} \div \frac{x^2+2x+4}{3x^2-15x}$

(12) n (x) = $\frac{x^3-8}{x^2-6x+5} \div \frac{x^3+2x^2+4x}{2x^2+x-3}$

(13) If $n_1(x) = \frac{x^2}{x^3-x^2}$, $n_2(x) = \frac{x^3+x^2+x}{x^4-x}$

prove that : $n_1 = n_2$

(14) Find the common domain of n_1 and n_2 to be equal such that : $n_1(x) = \frac{x^2+3x+2}{x^2-4}$, $n_2(x) = \frac{x^2-1}{x^2-3x+2}$

Choose the correct answer :-

(1) the point of intersection of the two st. lines : $x = 2$ and $x + y = 6$ is ………… [(2 , 6) , (2 , 4) , (4 , 2) , (6 , 2)]

(2) the point of intersection of the two st. lines : $2x - y = 3$ and $2x + y = 5$ lies on the ………… quadrant .[1^{st} ,2^{nd} , 3^{rd} , 4^{th}]

(3) the two st. lines $x + 5y = 1$ and $x + 5y - 8 = 0$ are …………
[parallel , coincide , intersect , perpendicular]

(4) the two st. lines $3x + 4y = 1$ and $6x + 8y = 2$ are …………
[parallel , coincide , intersect , perpendicular]

(5) the S. S. of the two equations $x + y = 0$ and $y - 1 = 0$ is ……
[{ (– 1 , 1) } , { – 1 , 1 } , [– 1 , 1] , { (1 , – 1) }]

(6) the number of solutions of the two equations $x + y = 2$ and $x + y = 0$ is ……… [0 , 1 , 2 , infinite numbers]

(7) the number of solutions of the two equations $x + y = 2$ and $x + y - 3 = 0$ is ……… [0 , 1 , 2 , infinite numbers]

(8) if the two equations $x + 4y = 7$ and $3x + ky = 21$ has infinite numbers of solutions , then k = ……… [4 , 7 , 12 , 21]

(9) the curve of the function f such that $f(x) = x^2 - 3x + 2$ cuts x – axis at the two points ……………. [(2 , 0) , (3 , 0) or (2 , 0) , (1 , 0) or (– 2 , 0) , (– 1 , 0) or (2 , 0) , (– 1 , 0)]

(10) the S. S. of the equation $x^2 - 4x + 4 = 0$ is …………
[{ – 2 , 2 } , { 4 , 1 } , { 2 } , $\emptyset$]

(11) the S. S. of the equation $x^2 + 5 = 0$ is …………
[{ $\sqrt{5}$, – $\sqrt{5}$ } , { – $\sqrt{5}$ } , { $\sqrt{5}$ } , $\emptyset$]

(12) in the equation $ax^2 + bx + c = 0$ if $b^2 - 4ac > 0$, then the number of roots equals ………… [1 , 2 , 0 , 3]

(13) if the two equations $x + 3y = 6$ and $2x + ky = 12$ have an infinite number of solutions , then k = ……… [2 , 6 , 3 , 1]

(14) if the two equations $x + 2y = 4$ and $2x + ky = 11$ represent two parallel lines , then k = ……… [4 , – 4 , 1 , – 1]

(15) if $x = 3$ belongs to the S. S. of the equation $x^2 - a\,x - 6 = 0$ then $a =$ ………… [3 , 2 , 1 , − 1]

(16) the ordered pairs that satisfies both of the two equations $x\,y = 2$ and $x - y = 1$ is ………
[(1 , 2) , (2 , 1) , (1 , 1) , (2 , − 1)]

(17) the S. S. of the two equations $x = y$ and $x\,y = 1$ is ………
[{ (1 , 1) } , { (− 1 , − 1) } , { (− 1 , 1) } , { (1 , 1) ,(− 1 , − 1) }]

(18) the S. S. of the two equations $x - y = 0$ and $x\,y = 9$ is ………
[{ (0 , 0) } , { (− 3 , − 3) } , { (3 , 1) } , { (3 , 3) , (− 3 , − 3) }]

(19)one solution of the two equations $x - y = 2$ and $x^2 + y^2 = 20$ in R may be ……… [(− 4 , 2) , (2 , − 4) , (3 , 1) , (4 , 2)]

(20) if $x = 1$, $x^2 + y^2 = 10$ then $y =$ ……… [− 3 , ± 3 , 2 , 3]

(21) if $x = y + 1$, $(x - y)^2 + y = 3$ then $y =$ ……… [0 , 1 , 2 , 3]

(22) if $a\,b = 3$, $a\,b^2 = 12$ then $b =$ ……… [4 , 2 , − 2 , ± 2]

(23) if $x^2 - y^2 = 2 (x + y)$ then $x - y =$ ……… [2 , 4 , 6 , 8]

(24) the S. S. of the two equations $x + y = 0$, $x^2 + y^2 = 2$ is ………
[{ (0 , 0) } , { (1 , − 1) } , { (− 1 , 1) } , { (1 , − 1) , (− 1 , 1) }]

(25) if $x - 3 = 0$, $y^2 = x + 6$ then $y =$ ……… [9 , 3 , − 3 , ± 3]

(26) the set of zeros of f where $f (x) = x^2 - 9$ is ……………
[{ 3 } , { − 3 } , (3 , − 3) , { 3 , − 3 }]

(27) the set of zeros of f where $f (x) = x^2 + 9$ is ……………
[{ 3 } , { 3 , − 3 } , { − 3 } , ∅]

(28) the set of zeros of f where $f (x) = (x - 1)^2 (x + 2)$ is ……
[{ 1 , 2 } , { 1 , − 2 } , { − 1 , 2 } , { − 1 , − 2 }]

(29) the domain of the function f where $f (x) = \frac{x (x + 2)}{x^2 - 4}$ is …..
[R , R − { − 2 , 2 } , R − { 2 , 0 } , R − { 2 }]

(30) the set of zeros of f where $f (x) = \frac{x - 3}{x + 2}$ is ……………
[{ 0 } , { 3 } , { − 2 } , { 3 , − 2 }]

(31) if the function f where f (x) = $\frac{x^2 - 9}{x}$ has a multiplicative inverse then the domain is ....

[R , R – { 0 , 3 , – 3 } , R – { 0 } , R – { 0 , 3 }]

(32) if n (x) = $\frac{x - 1}{x - 2}$, then the domain of n^{-1} (x) is ....

[R , R – { 1 } , R – { 2 } , R – { 1 , 2 }]

(33) if the function f where f (x) = $\frac{x - 2}{x - 5}$ has a multiplicative inverse if its domain is ....

[R , R – { 5 } , R – { 2 } , R – { 2 , 5 }]

(34) if n (x) = $\frac{x - 1}{x + 3}$, then the domain of n^{-1} (x) is ....

[R – { – 3 } , R – { 1 } , R – { 1 , – 3 } , { 1 , – 3 }]

(35) the common domain of the two fractions $\frac{2}{x - 3}$, $\frac{7}{x - 6}$ is .... [R , R – { 3 } , R – { 6 } , R – { 3 , 6 }]

(36) the simplest form of the function :

n (x) = $\frac{x + 1}{x - 1} + \frac{1 - x}{x - 1}$ is .... [zero , $\frac{2}{2x - 2}$, $\frac{2}{x - 1}$, $\frac{2}{(x - 1)^2}$]

Probability

Choose the correct answer :-

(1) A coin is thrown twice , then the probability of not getting head in the second time is .... [$\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1]

(2) If a coin is tossed once then the probability of appearing tail or head is .... [0 % , 25 % , 50% , 100%]

(3) If a die is rolled once , A is an event of a prime numbers , B is an odd number then P (A ∩ B) = ... [$\frac{1}{3}$, $\frac{1}{2}$, $\frac{1}{6}$, $\frac{2}{3}$]

(4) Probability of impossible event = ... [∅ , 0 , 1 , – 1]

(5) If the probability of success of Ahmed is 95% then the probability of not success = ...[20% , 10% , 5% , 0%]

(6) If a die is tossed once then the probability of an odd number is .... [$\frac{1}{2}$, $\frac{1}{3}$, 1 , 3]

(7) If the probability of occuring the event A is 75% then the probability of not occurring the event A = ... [$\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1]

(8) If A and B are events from S where B $\subset$ A , then
P (A $\cup$ B) = ...   [P (A) , P (B)]