



المساء

إسهاماً
من جريدة
«المساء» في محاربة ظاهرة الدروس
الخصوصية نقدم هذه الخدمة المجانية
لطلاب المرحلة الثانوية وقد آتينا على أنفسنا
أن يقدم هذه المادة التعليمية في الصفحة نخبة
منتقاء من الموجهين والمدرسين الأوائل حتى تكون
الاستفادة منها على أكمل وجه.. ومساعدتهم في تعلم
الطريقة المثالية للإجابة على جميع الأسئلة في كل
المواد ومساعدتهم في الحصول على الدرجات التي
يتمنونها.

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خصوصي

11

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إعداد:
مراد البطل

مراجعة ليلة الامتحان في الجبر لغات للشهادة الإعدادية

The solution

$$\begin{aligned} \therefore \frac{1+x}{5+x} &= \frac{5+x}{17+x} \\ \therefore (1+x)(17+x) &= (5+x)(5+x) \\ \therefore 17+18x+x^2 &= 25+10x+x^2 \\ \therefore 17+18x &= 25+10x, \therefore 18x-10x \\ &= 25-17 \\ \therefore 8x &= 8, \quad x = 1 \end{aligned}$$

(6) If $y \propto x$ and $y = 40$ when $x = 14$, then find x when $y = 80$

The solution

$$\begin{aligned} \therefore y \propto x, \therefore y &= mx, \therefore 40 = m(14) \\ \therefore m &= \frac{40}{14} = \frac{20}{7}, \therefore y = \frac{20}{7}x \\ \therefore 80 &= \frac{20}{7}x, \therefore x = 80 \div \frac{20}{7} = 28 \end{aligned}$$

(7) If $\frac{a+2b}{6} = \frac{b+3c}{3}$, prove that : $a \propto c$

The solution

$$\begin{aligned} \therefore \frac{a+2b}{6} &= \frac{b+3c}{3}, \therefore 3(a+2b) = 6(b+3c) \\ \therefore 3a+6b &= 6b+18c, \therefore 3a = 18c, \therefore a = \frac{18}{3}c \\ \therefore a &= 6c, \therefore a \propto c \end{aligned}$$

(8) From the data of the following table , answer the following questions

X	2	4	6
Y	6	3	2

- Show the kind of variation between y and x
- Find the constant proportion
- Find the value of y when $x = 3$
- Find the value of x when $y = 2\frac{2}{5}$

The Solution

A) When x is increase y is decrease

So the relation is inverse variation .

B) $y = \frac{m}{x}, 6 = \frac{m}{2} \therefore m = 12$

C) $y = \frac{12}{x} = \frac{12}{3} = 4$

D) $2\frac{2}{5} = \frac{12}{x}, x = 12 \div 2\frac{2}{5} = 5$

(9) Calculate the mean and standard deviation of the set of values : 65 ,61 ,70 ,64 ,70 , 76 ,70

The solution

$$\text{The mean } (\bar{X}) = \frac{65+61+70+64+70+76+70}{7} = 68$$

x	x - \bar{x}	(x - \bar{x}) ²
65	65 - 68 = -3	9
61	61 - 68 = -7	49
70	70 - 68 = 2	4
64	64 - 68 = -4	16
70	70 - 68 = 2	4
76	76 - 68 = 8	64
70	70 - 68 = 2	4
		150

$$\text{Then the standard deviation } (\sigma) = \sqrt{\frac{150}{7}} \approx 4.6$$

10) The following frequency shows the ages of 10 student :

Age in years	5	8	9	10	12	Total
Number of children	1	2	3	3	1	10

Calculate the mean and the standard deviation to ages in year

The solution

x	k	xk	x - \bar{x}	(x - \bar{x}) ²	(x - \bar{x}) ² k
5	1	5	5-9	16	16
8	2	16	8-9	1	2
9	3	27	9-9	0	0
10	3	30	10-9	1	3
12	1	12	12-9	9	9
Total	$\sum k = 10$	$\sum xk = 90$			$\sum (x - \bar{x})^2 k = 30$

$$\therefore \bar{x} = \frac{\sum xk}{\sum k} = \frac{90}{10} = 9, \text{ The standard deviation}$$

$$(\sigma) = \sqrt{\frac{30}{10}} \approx 1.7 \text{ years.}$$

(8) If $X = \{1, 2, 5\}, Y = \{2, 3, 7, 8\}$ and R is a relation from X to Y where "a R b" means " $a + b = \text{an odd number}$ " for all $a \in X, b \in Y$ Write R and show that it is a function.

The solution

$$R = \{(1, 2), (1, 8), (2, 3), (2, 7), (5, 2), (5, 8)\}$$

The relation is not function because each element in x has more than one in y

(9) If $f(x) = ax + 4$ and $f(1) = 7$,

then find the value of : $f(4) + f(2) - f(5)$

The solution

$$\therefore f(1) = 7, \therefore 7 = a \times 1 + 4, \therefore 7 = a + 4$$

$$\therefore a = 3, f(x) = 3x + 4,$$

$$\therefore f(4) = 3 \times 4 + 4 = 16,$$

$$\therefore f(2) = 3 \times 2 + 4 = 10,$$

$$\therefore f(5) = 3 \times 5 + 4 = 19,$$

$$\therefore \text{the value of } f(4) + f(2) - f(5) = 16 + 10 - 19 = 7$$

(10) IF : $X = \{2, 3, 4\}, Y = \{3, 4, 5, 6, 7, 8\}$ and $f: X \rightarrow Y$ where $f(x) = 9 - x$ Find the images of the elements of X by the function f

The solution

The images of the elements of X by the

function f is $\{7, 6, 5\}$

Answer the following questions Unit (2)

(1) Find the positive number which if its square is added to each of the two terms of the ratio 7 : 11 it becomes 4 : 5 .

The Solution

$$\text{Let the number } x : \frac{x^2 + 7}{x^2 + 11} = \frac{4}{5}$$

$$\therefore 5(x^2 + 7) = 4(x^2 + 11) \therefore 5x^2 - 4x^2 = 44 - 35$$

$$\therefore x^2 = 9 \therefore x = \pm 3$$

Then the positive number is 3

(2) If a, b, c and d are proportional

quantities , then prove that $\frac{ac}{bd} = \left(\frac{a-c}{b-d}\right)^2$

The Solution

$$\frac{a}{b} = \frac{c}{d} = m \text{ then } a = bm, c = dm$$

$$i) \text{ L.H. S. } = \frac{ac}{bd} = \frac{bm \cdot dm}{bd} = m^2$$

$$\text{R.H.S. } = \left(\frac{a-c}{b-d}\right)^2 = \left(\frac{bm-dm}{b-d}\right)^2 = m^2$$

$$\therefore \text{L.H.S.} = \text{R. H. S.}$$

(3) If b is the middle proportional between a and c

$$\text{, then prove that : } \frac{2c^2 - 3b^2}{2b^2 - 3a^2} = \frac{c^2}{b^2}$$

The Solution

$$\text{L. H. S. } = \frac{2c^2 - 3b^2}{2b^2 - 3a^2} = \frac{2c^2 - 3c^2m^2}{2c^2m^2 - 3c^2m^4} =$$

$$\frac{c^2(2 - 3m^2)}{c^2m^2(2 - 3m^2)} = \frac{1}{m^2}$$

$$\text{R. H. S. } = \frac{c^2}{b^2} = \frac{c^2}{c^2m^2} = \frac{1}{m^2}$$

(4) If $3a = 2b$, then find the value of : $\frac{3a-b}{2a+b}$

The solution

$$\therefore 3a = 2b, \therefore \frac{a}{b} = \frac{2}{3}, \therefore a = 2m, b = 3m$$

$$\therefore \frac{3a-b}{2a+b} = \frac{3(2m)-(3m)}{2(2m)+(3m)} = \frac{3m}{7m} = \frac{3}{7}$$

(5) Find the number that if we add it to each of the numbers : 1 , 5 , 17 , then they become in continued proportion.

(3) Draw the function $f(x) = 4 - x^2$, where $x \in [-3, 3]$, then find :

1) the vertex of the curve.

2) The max. or mini. Of this curve.

3) The equation of x

The solution

x	-3	-2	-1	0	1	2	3
F(x)	-5	0	3	4	3	0	-5

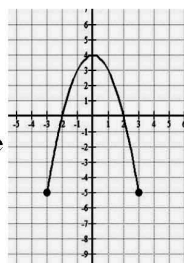
1) The Vertex = (0 , 4)

2) The maximum value at $y = 4$

3) The equation : the curve

is symmetry. about Y-axis

when $X = 0$



(4) If $x = \{1, 2, 3\}, y = \{1, 3, 6, 9, 13\}$ and R is a relation from X to Y where aRb means $<< a = \frac{1}{3}b >>$ for all $a \in x, b \in y$. Write the relation, represent it by arrow diagram and find its rang. Is the relation is function or not ? Why?

The Solution

$$R = \{(1, 3), (2, 6), (3, 9)\}$$

The range = $\{3, 6, 9\}$

The relation is function

, because each

element in X has one image in Y

(5) If function $F = \{(1, 3), (2, 5), (3, 7), (4, 9), (5, 11)\}$

, then :

- Write the domain and the Range of function
- Write the rule of function.

The solution

a) The domain = $\{1, 2, 4, 5\}$,

the range = $\{3, 5, 7, 9, 11\}$

The rule of the function is $f(x) = 2x + 1$

(6) The opposite figure represents the curve of the function f where $f(x) = x^2 + k$ if $OA = 9$ units.

Find :

⊙ The value of k

⊙ The coordinates of B and C

⊙ The area of triangle with vertices

A, B and C

The solution

$$\odot \therefore OA = 9 \text{ units} \therefore A = (0, -9),$$

$A(0, -9)$ lies on the curve , $\therefore (0, -9)$ satisfies the equation of the curve , $\therefore -9 = 0^2 + k, k = -9 \therefore f(x) = x^2 - 9$

⊙ \therefore The curve of the function intersects x -axis at the point B and C

$$\therefore x^2 - 9 = 0, \therefore x^2 = 9, \therefore x = \pm 3$$

$$\therefore B(3, 0), C(-3, 0), \therefore BC = 6 \text{ length unit, } OA = 9 \text{ Length unit.}$$

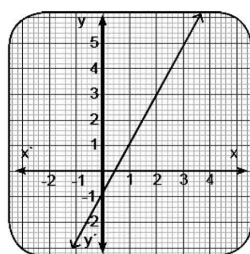
$$\odot \therefore \text{The area of triangle } ABC = \frac{1}{2} \times 6 \times 9$$

$$= 27 \text{ square unit.}$$

(7) Represent graphically the linear relation : $y = 2x - 1$

The Solution

X	0	1	2
Y	-1	1	3



(a) M^3 (b) M^2 (c) $2M$ (d) $\frac{M}{2}$

21) If $a, 3x, b$ and $5x$ are proportional quantities, then $\frac{a}{b} = \dots\dots\dots$

(a) $\frac{3}{5}$ (b) $\frac{5}{3}$ (c) $\frac{8}{3}$ (d) 15

Choose the correct answer Unit (3)

22) If all individuals value are equal in values , then $\dots\dots\dots$

(a) $\sigma = 0$ (b) $\bar{x} = 0$

(c) $x - \bar{x} > 0$ (d) $x - \bar{x} < 0$

23) The arithmetic mean of a set of the values : $a, 5, 8, 7, 6$ equals 6, then $a = \dots$

(a) 3 (b) 4 (c) 5 (d) 6

24) The simplest and easiest dispersion measure is $\dots\dots\dots$

(a) median (b) the range

(c) mean (d) mode

25) Selecting a sample of layers of the statistical community is called..... sample

(a) random (b) stratified

(c) deliberate (d) cluster

26) If 65 is the greatest individuals of a set of individuals and its range is 29 , then the smallest individuals of this set equals $\dots\dots\dots$

(a) 35 (b) 37 (c) 38 (d) 36

27) If $\sum (X - \bar{X})^2 = 48$, for a set of of values whose number is 12 , then $\sigma = \dots\dots\dots$

(a) -4 (b) -2 (c) 2 (d) 4

28) The $\dots\dots\dots$ Is one of the measures of the dispersion.

(a) Mean (b) mode (c) rang (d) median

The solution

1) (b) 2) (a) 3) (c)

4) (c) 5) (c) 6) (d)

7) (b) 8) (c) 9) (c)

10) (c) 11) (b) 12) (b)

13) (c) 14) (d) 15) (d)

16) (a) 17) (c) 18) (b)

19) (a) 20) (b) 21) (a)

22) (a) 23) (b) 24) (b)

25) (b) 26) (d) 27) (c)

28) (c)

[2] Answer the following questions Unit (1) :

(1)) If $X \times Y = \{(1, 1), (1, 3), (1, 5)\}$

Find : ⊙ X, Y

⊙ $Y \times X$

The Solution

⊙ $X = \{1\}, Y = \{1, 3, 5\}$

⊙ $Y \times X = \{(1, 1), (3, 1), (5, 1)\}$

(2) If $x = \{1, 5, 6\}, y = \{5\}, Z = \{2, 3\}$

Find : ⊙ $n(X \times Z)$

⊙ $(Y \cap X) \times Z$

⊙ $(Y \cap X) \times (X - Y)$

The solution

⊙ $n(X \times Z) = 3 \times 2 = 6$

⊙ $(Y \cap X) \times Z = \{5\} \times \{2, 3\} = \{(5, 2), (5, 3)\}$

⊙ $(Y \cap X) \times (X - Y) = \{5\} \times \{1, 6\} = \{(5, 1), (5, 6)\}$

Final Revision (Algebra)

For 3rd Preparatory

[1] Choose the correct answer: (Unit 1)

1) The point $(-3, 4)$ lie in $\dots\dots\dots$ quadrant.

(a) first (b) second (c) third (d) fourth

2) If $X \times Y = \{(2, 3), (2, 4)\}$, then $n(X) = \dots$

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

3) If $f(x) = 2x + b$, and $f(5) = 11$, then $b = \dots\dots\dots$