

MODUL 10
MATEMATIK SPM "ENRICHMENT"
TOPIC : GRAPHS OF FUNCTIONS
TIME : 2 HOURS

1. a) Complete Table 1 in the answer space for the equation $y = 2x^2 - 5x - 3$.
- b) For this part, use a graph paper.
By using a scale 2 cm to 1 unit on the x-axis and 2 cm to 5 units on the y-axis, draw the graph of $y = 2x^2 - 5x - 3$ for $-3 \leq x \leq 5$.
- c) From your graph, find
i) the value of y when $x = -2.4$,
ii) the value of x when $2x^2 - 5x - 3 = 0$.
- d) Draw a suitable straight line on your graph to find all the values of x which satisfy the equation $2x^2 - 8x = 7$ for $-3 \leq x \leq 5$.
State these values of x.

Answer:

a)

X	-3	-2	-1	0	0.5	1	2	3	4	5
Y	30		4	-3		-6	-5	0	9	22

Table 1

c) i) $y =$

ii) $x =$

d) $x =$

2. a) Complete Table 2 in the answer space for the equation $y = x^2 - 5x + 4$.
- b) For this part, use a graph paper.
By using a scale 2 cm to 1 unit on the x-axis and 2 cm to 5 units on the y-axis, draw the graph of $y = x^2 - 5x + 4$ for $0 \leq x \leq 8$.
- c) From your graph, find
a. the value of y when $x = 4.5$,
b. the value of x when $y = 21.75$
- d) Draw a suitable straight line on your graph to find all the values of x which satisfy the equation $x^2 - 7x + 3 = 0$ for $0 \leq x \leq 8$.
State these values of x.

Answer:

a)

X	0	1	2	2.5	3	4	5	6	7	8
Y	4	0	-2		-2		4	10	18	28

Table 2

c) i) $y =$

ii) $x =$

d) $x =$

3. a) Complete Table 3 in the answer space for the equation $y = \frac{5}{x}$
- b) For this part, use a graph paper.
By using a scale 2 cm to 1 unit on the x-axis and 2 cm to 2 units on the y-axis, draw the graph of $y = \frac{5}{x}$ for $-5 \leq x \leq 5$.
- c) From your graph, find
a. the value of y when $x = 1.8$,
b. the value of x when $y = -6$.
- d) From your graph, find all the values of x with the condition that the value of y is three times the value of x.

Answer:

a)

X	-5	-3	-2	-1	-0.5	0.5	0.9	1.5	2.5	5
Y	-1	-1.7	-2.5		-10	10	5.6	3.3		1

Table 3

c) i) $y =$

ii) $x =$

d) $x =$

4. a) Complete Table 4 in the answer space for the equation $y = \frac{2}{x}$
- b) For this part, use a graph paper.
By using a scale 2 cm to 1 unit on the x-axis and 2 cm to 1 units on the y-axis, draw the graph of $y = \frac{2}{x}$ for $-4 \leq x \leq 4$.
- c) From your graph, find
a. the value of y when $x = -1.5$,
b. the value of x when $y = 1.2$.
- d) Draw a suitable straight line on your graph to find all the values of x which satisfy the equation $\frac{2}{x} = \frac{3}{4}x - 2$ for $-4 \leq x \leq 4$.

State these values of x.

Answer:

a)

X	-4	-2.5	-2	-1	-0.5	0.5	1	2	2.5	4
Y	-0.5	-0.8		-2	-4	4	2	1		0.5

Table 4

c) i) $y =$

ii) $x =$

d) $x =$

5. a) Complete Table 5 in the answer space for the equation $y = x^3 - 13x + 18$.
- b) For this part, use a graph paper.
By using a scale 2 cm to 1 unit on the x-axis and 2 cm to 5 units on the y-axis, draw the graph of $y = x^3 - 13x + 18$ for $-4 \leq x \leq 4$.
- c) From your graph, find
a. the value of y when $x = -1.5$,
b. the value of x when $y = 25$.
- d) Draw a suitable straight line on your graph to find all the values of x which satisfy the equation $x^3 - 11x - 2 = 0$ for $-4 \leq x \leq 4$.
State these values of x.

Answer:

a)

X	-4	-3	-2	-1	0	1	2	3	4
Y	6		36	30	18	6		6	30

Table 5

c) i) $y =$

ii) $x =$

d) $x =$

6. a) Complete Table 6 in the answer space for the equation $y = x^3 + x^2 - 12x - 5$.
- b) For this part, use a graph paper.
By using a scale 2 cm to 1 unit on the x-axis and 2 cm to 5 units on the y-axis, draw the graph of $y = x^3 + x^2 - 12x - 5$ for $-4 \leq x \leq 4$.
- c) From your graph, find
a. the value of y when $x = 0.5$,
b. the value of x when 11.9.
- d) Draw a suitable straight line on your graph to find all the values of x which satisfy the equation $x^3 + x^2 - 10x = 0$ for $-4 \leq x \leq 4$.
State these values of x.

Answer:

a)

X	-4	-3	-2	-1	0	1	2	3	4
Y	-5	13		7	-5	-15	-17		27

Table 6

c) i) $y =$

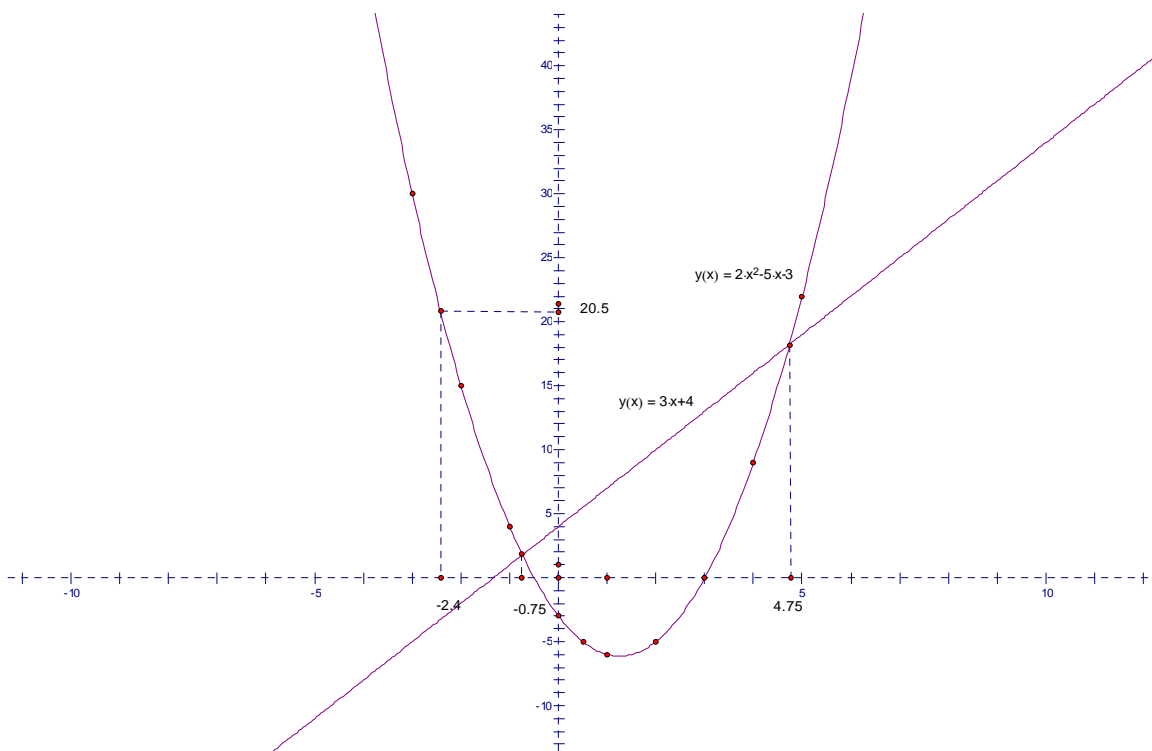
ii) $x =$

d) $x =$

MODULE 10 – ANSWERS
TOPIC: GRAPHS OF FUNCTIONS

1. a) $x=-2 \ y=15$ $x=0.5 \ y= -5$ $x=3 \ y=0$

b) graph



- c) i) $x=-2.4 \ y= 20.5$
ii) when $2x^2 - 5x - 3 = 0$
 $y = 0$
Then the values of x is -0.5 and 3

e) $y=2x^2-5x-3$
 $0=2x^2-8x-7 \quad (-)$

 $Y= \quad 3x + 4$

 $X \quad 0 \quad 3$
 $Y \quad 4 \quad 13$

From the graph $x= -0.75$ and 4.75

2. a) $x=2.5$ $y=-2.25$ $x=4$ $y=0$

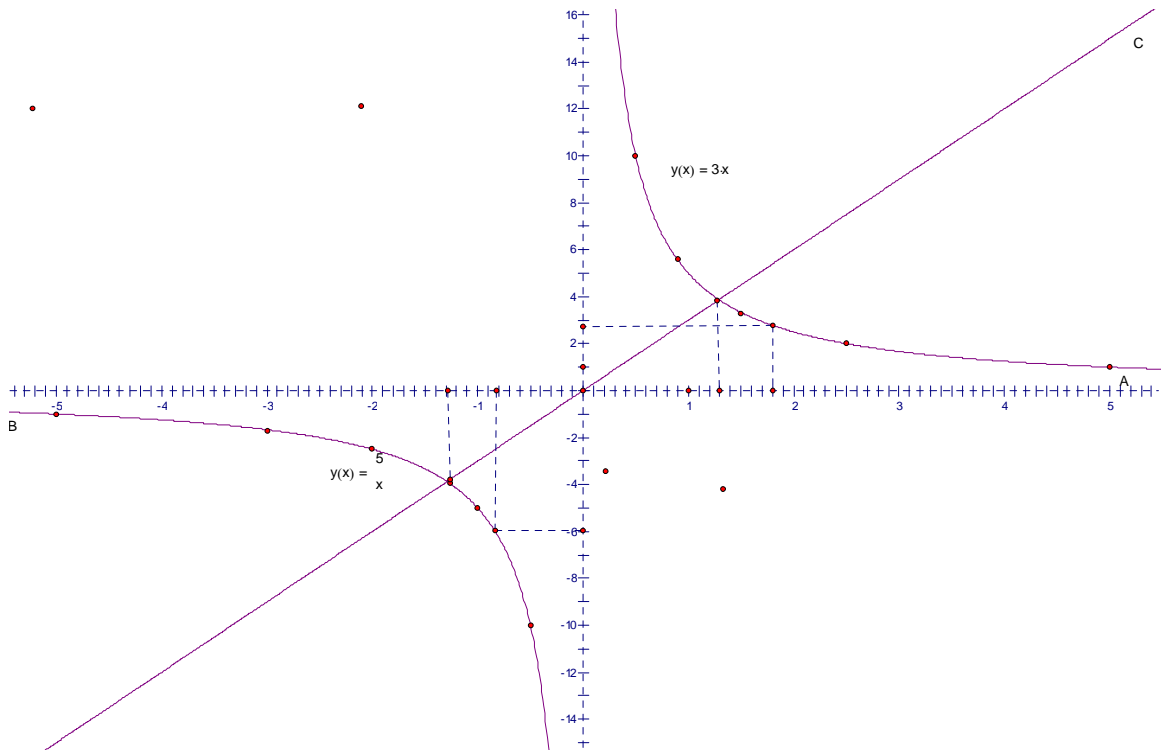
b) graph 2

c) i) $y=1.75$
ii) $x=7.4$

e) straight line $y=2x+1$
 $x=0.45$ and 6.55

3. a) $x=-1$ $y=-5$ $x=2.5$ $y=2$

b) graph



c) i) $x=1.8$ $y= 2.8$
ii) $y=-6$ $x=-0.8$

e) The graph is $y=3x$

X	0	2
Y	0	6

The values of $x= -1.3$ and 1.3

4. a) $x=-2 \quad y=-1 \quad x=2.5 \quad y=0.8$

b) graph

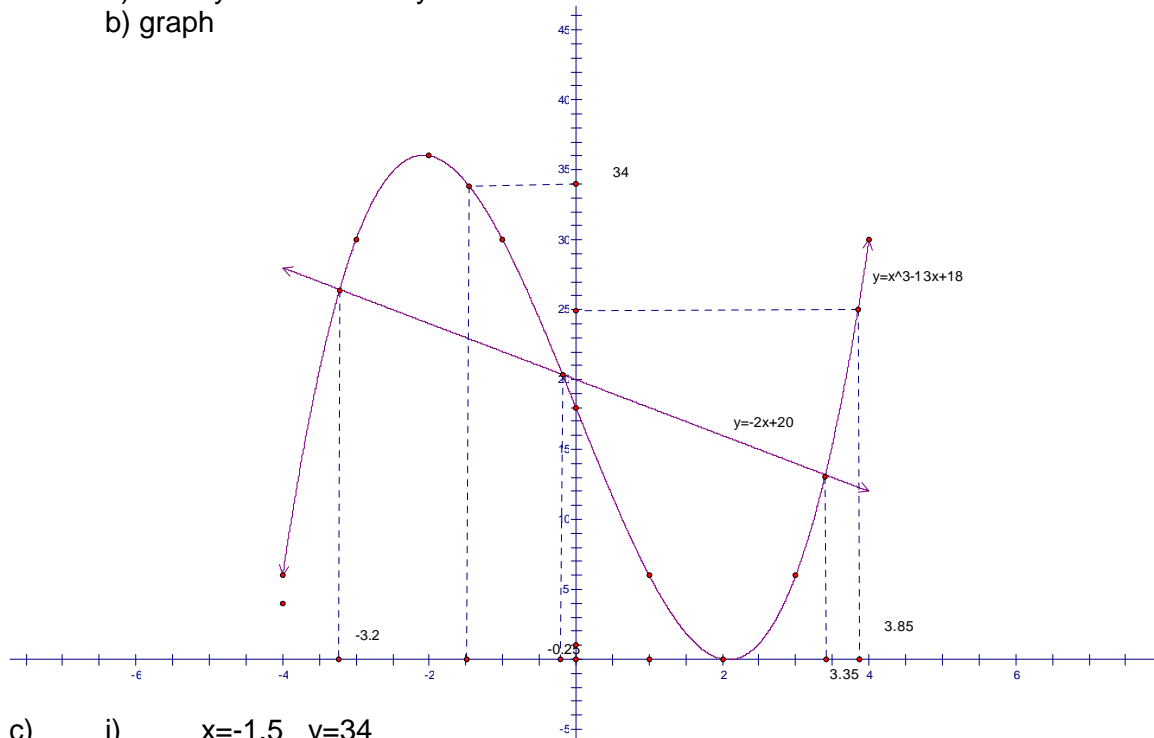
c) i) $y=-1.3$
 ii) $x=1.7$

e) The straight line is $y = \frac{3}{4}x - 2$

The values of $x = -0.75$ and 3.45

5. a) $x=-3 \quad y=30 \quad x=2 \quad y=0$

b) graph



c) i) $x=-1.5 \quad y=34$
 ii) $y=25 \quad x=3.85$

e) $y = x^3 - 13x + 18$
 $0 = x^3 - 11x - 2 \quad (-)$

 $Y = -2x + 20$

X 0 4
 Y 20 12

$$X = -3.2, -0.25 \text{ and } 3.35$$

6. a) $x = -2$ $y = 15$ $x = 3$ $y = -5$

b) graph 6

c) i) $y = 10.75$
ii) $x = -1.5$

e) $y = -12x - 5$

$$x = -3.6, 0 \text{ and } 2.75$$