SAMPEL PERCUMA

Modul STPM Mathematics T Semester 1 Pahang 2022

Set penuh: Kertas Percubaan STPM

Sem 1 · Mathematics T

Sampel ini: 4 muka surat. Set penuh ada:

- 2 fail PDF
- Semester 1: kertas percubaan (trial) negeri, subjek yang dipilih + skema
- Blueprint 30 hari Semester 1 (setiap subjek)
- Semester 3: percubaan 2024, 10 subjek, banyak negeri, soalan + skema dalam satu fail

RM12.90

BELI SET PENUH RM12.90 >

nightmew.com/p/stpm · FPX semua bank · download sejurus lepas bayar

Sampel bermula di muka surat sebelah

MODUL PENTAKSIRAN PDPC SEMESTER1 MODUL PENTAKSIRAN PDPC SEMESTER 1

954/1 **STPM 2022**

MATHEMATICS (T) [MATEMATIK (T)]

PAPER 1 (KERTAS 1)

One and a half hours (Satu jam setengah)

MODUL PENTAKSIRAN PDPC SEMESTER1 MODUL PENTAKSIRAN PDPC SEMESTER 1

MODUL PENTAKSIRAN PDPC SEMESTER 1

NEGERI PAHANG

Instructions to candidates:

DO NOT OPEN THIS QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO.

Answer **all** *questions in Section A.*

Answer **one** *question only in Section B. You may answer all the questions but, only the first answer will be marked.*

Write the answers in the answer sheets provided. Begin each answer on a fresh answer sheet. All working should be shown.

Non-exact numerical answers may be given correct to three significant figures, or one decimal place in the case of angles in degrees, unless a different level of accuracy is specified in the question.

Answers may be written in either English or Malay.

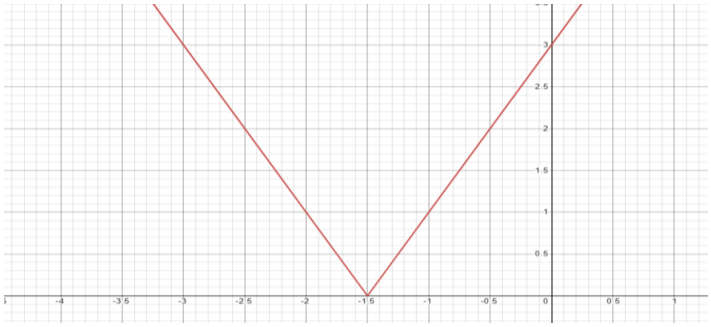
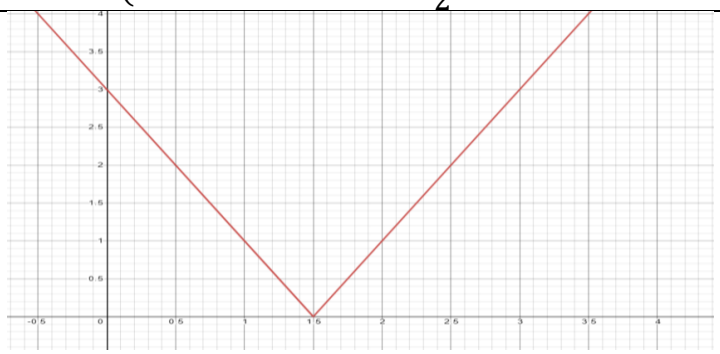
Scientific calculators may be used. Programmable and graphic display calculators are prohibited.

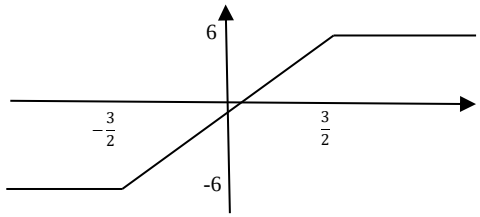
This question paper consists of 5 printed pages

Section A [45 marks]
Answer all questions in this section

1. a) Express $f(x) = |2x+3| - |2x-3|, x \in R$ in the non – modulus form. [5]
Hence ,sketch the graph of f and determine the range . [3]

b) solve the equation $\sqrt{\frac{4x}{1-\sqrt{x}}} = 3$ [2]

	 $g(x) = \|2x+3\|$	
	$g(x) = \begin{cases} -2x - 3, & x < -\frac{3}{2} \\ 2x+3, & x \geq \frac{3}{2} \end{cases}$	M1
		
	$h(x) = \begin{cases} -2x+3, & x < \frac{3}{2} \\ 2x-3, & x \geq \frac{3}{2} \end{cases}$	M1
	$for \quad x < -\frac{3}{2}, \quad f(x) = -2x-3-(-2x+3) = -6$ $for \ -\frac{3}{2} \leq x < \frac{3}{2}, \quad f(x) = 2x+3-(-2x+3) = 4x$ $for \ x \geq \frac{3}{2}, \quad f(x) = 2x+3-(2x-3) = 6$	M1 A1

	$f(x) = \begin{cases} -6, & x < -\frac{3}{2} \\ 4x, & -\frac{3}{2} \leq x < \frac{3}{2} \\ 6, & x \geq \frac{3}{2} \end{cases}$	A1
		D1 D1
	The range of f is $\{y \mid -6 \leq y \leq 6\}$	B1
b)	$\left(4\sqrt{x} - 3\right)\left(\sqrt{x} + 3\right) = 0$	M1
	$x = \frac{9}{16}$	A1

2. Express $\frac{1}{r(r+2)}$ in partial fractions. [4]

Hence, prove by the method of differences that

$$\sum_{r=1}^{n} \frac{1}{r(r+2)} = \frac{n(an+5)}{b(n+1)(n+2)}$$

where a and b are constants to be found. [5]

2	$\frac{1}{r(r+2)} = \frac{A}{r} + \frac{B}{r+2}$	B1
	$A = \frac{1}{2}, B = -\frac{1}{2}$	M1 *(solve for A&B)* M1
	$\frac{1}{r(r+2)} \equiv \frac{1}{2r} - \frac{1}{2(r+2)}$	A1
	$r = 1$: $\frac{1}{2(1)} - \frac{1}{2(1+2)} = \frac{1}{2} - \frac{1}{6}$ $r = 2$: $\frac{1}{2(2)} - \frac{1}{2(2+2)} = \frac{1}{4} - \frac{1}{8}$ $r = 3$: $\frac{1}{2(3)} - \frac{1}{2(3+2)} = \frac{1}{6} - \frac{1}{10}$ $r = n-1$: $\frac{1}{2(n-1)} - \frac{1}{2(n-1+2)} = \frac{1}{2(n-1)} - \frac{1}{2(n+1)}$ $r = n$: $\frac{1}{2(n)} - \frac{1}{2(n+2)} = \frac{1}{2n} - \frac{1}{2(n+2)}$	M1 (Method of difference seen)

	$\sum_{r=1}^{n} \frac{1}{r(r+2)} = \frac{1}{2} + \frac{1}{4} - \frac{1}{2(n+1)} - \frac{1}{2(n+2)}$	M1
	$= \frac{1}{2}\left(\frac{3}{2} - \frac{1}{n+1} - \frac{1}{n+2}\right)$ $= \frac{1}{4}\left(\frac{n(3n+5)}{(n+1)(n+2)}\right)$	M1A1
	Comparison , $a = 3, b = 4$	A1

3. Given $A = \begin{pmatrix} 1 & 1 & t \\ t & 1 & 1 \\ 1 & t & 1 \end{pmatrix}$

a) Use the properties of determinant to show $|A| = (t+2)(t-1)^2$ [5]

b) Find the range of values of t such that matrix A is non – singular [2]

3.a)	$\begin{bmatrix} 1 & 1 & t \\ t & 1 & 1 \\ 1 & t & 1 \end{bmatrix} = \begin{bmatrix} 2 & 1 & t \\ t+1 & 1 & 1 \\ t+1 & t & 1 \end{bmatrix} = \begin{bmatrix} t+2 & 1 & t \\ t+2 & 1 & 1 \\ t+2 & t & 1 \end{bmatrix}$	M1
	$= (t+2)\begin{bmatrix} 1 & 1 & t \\ 1 & t & 1 \\ 1 & 1 & 1 \end{bmatrix}$	M1
	$= -(t+2)\begin{bmatrix} 1 & 1 & t \\ 1 & 1 & 1 \\ 1 & t & 1 \end{bmatrix}$	M1
	$= -(t+2)\begin{bmatrix} 1 & 1 & t \\ 0 & 1-t & t-1 \\ 0 & 0 & t-1 \end{bmatrix}$	M1
	$\therefore detM$ = (t+2)(1-t)(t-1)= $(t+2)(t-1)^2$	A1
b)	$\|M\| \neq 0$ $(t+2) \quad (t-1)^2 \neq 0$	M1
	$\{x \mid x \in R, x \neq -2, x \neq -1\}$	A1

TAMAT SAMPEL

Suka sampel ini?

Set penuh: Kertas Percubaan STPM

Sem 1 · Mathematics T

Sampel ini: 4 muka surat. Set penuh ada:

- 2 fail PDF
- Semester 1: kertas percubaan (trial) negeri, subjek yang dipilih + skema
- Blueprint 30 hari Semester 1 (setiap subjek)
- Semester 3: percubaan 2024, 10 subjek, banyak negeri, soalan + skema dalam satu fail

RM12.90

BELI SET PENUH RM12.90 >

nightmew.com/p/stpm · FPX semua bank · download sejurus lepas bayar