

3472/1

Matematik Tambahan

Kertas 1

November 2021

2 Jam

NAMA : \_\_\_\_\_

KELAS : \_\_\_\_\_

ANGKA GILIRAN: \_\_\_\_\_

NO KP: \_\_\_\_\_

**PEPERIKSAAN PERCUBAAN SPM**

**TAHUN 2021**

**MATEMATIK TAMBAHAN**

**Kertas 1**

**2 Jam**

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**JANGAN BUKA KERTAS SOALAN INI**

**SEHINGGA DIBERITAHU**

1. *Tulis nombor kad pengenalan dan angka giliran anda dalam ruang yang disediakan.*
2. *Kertas soalan ini adalah dalam dwibahasa.*
3. *Soalan dalam bahasa Melayu mendahului soalan yang sepadan dalam bahasa Inggeris.*
4. *Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam bahasa Melayu atau bahasa Inggeris.*
5. *Jawapan hendaklah ditulis dalam ruang jawapan yang disediakan.*
6. *Calon dibenarkan menggunakan kalkulator saintifik.*

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Kertas soalan ini mengandungi **20** halaman bercetak

**SENARAI RUMUS  
FORMULAE**

$$1 \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$2 \quad \log_a b = \frac{\log_c b}{\log_c a}$$

$$3 \quad T_n = a + (n-1)d$$

$$4 \quad T_n = ar^{n-1}$$

$$5 \quad S_n = \frac{n}{2}[2a + (n-1)d]$$

$$6 \quad S_n = \frac{a(r^n - 1)}{r - 1} = \frac{a(1 - r^n)}{1 - r}, r \neq 1$$

$$7 \quad Z = \frac{X - \mu}{\sigma}$$

$$8 \quad P(X = r) = {}^n C_r p^r q^{n-r}, p + q = 1$$

$$9 \quad {}^n P_r = \frac{n!}{(n-r)!}$$

$$10 \quad {}^n C_r = \frac{n!}{(n-r)!r!}$$

$$11 \quad I = \frac{Q_1}{Q_0} \times 100$$

$$12 \quad \bar{I} = \frac{\sum W_i I_i}{\sum W_i}$$

$$13 \quad \sin^2 A + \cos^2 A = 1$$

$$\sin^2 A + \operatorname{kos}^2 A = 1$$

$$14 \quad \sec^2 A = 1 + \tan^2 A$$

$$\operatorname{sek}^2 A = 1 + \tan^2 A$$

$$15 \quad \operatorname{cosec}^2 A = 1 + \cot^2 A$$

$$\operatorname{kosek}^2 A = 1 + \operatorname{kot}^2 A$$

$$16 \quad \sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$$

$$\sin(A \pm B) = \sin A \operatorname{kos} B \pm \operatorname{kos} A \sin B$$

$$17 \quad \cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$$

$$\operatorname{kos}(A \pm B) = \operatorname{kos} A \operatorname{kos} B \mp \sin A \sin B$$

$$18 \quad \tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$$

$$19 \quad \sin 2A = 2 \sin A \cos A$$

$$\sin 2A = 2 \sin A \operatorname{kos} A$$

$$20 \quad \cos 2A = \cos^2 A - \sin^2 A$$

$$= 2\cos^2 A - 1$$

$$= 1 - 2\sin^2 A$$

$$\operatorname{kos} 2A = \operatorname{kos}^2 A - \sin^2 A$$

$$= 2 \operatorname{kos}^2 A - 1$$

$$= 1 - 2\sin^2 A$$

$$21 \quad \tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$$

$$22 \quad \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$23 \quad a^2 = b^2 + c^2 - 2bc \cos A$$

$$a^2 = b^2 + c^2 - 2bc \operatorname{kos} A$$

$$24 \quad \text{Area of triangle/Luas segi tiga}$$

$$= \frac{1}{2} ab \sin C$$

**KEBARANGKALIAN HUJUNG ATAS Q(z) BAGI TABURAN NORMAL N(0, 1)**  
**THE UPPER TAIL PROBABILITY Q(z) FOR THE NORMAL DISTRIBUTION N(0, 1)**

| z   |         |         |         |         |         |         |         |         |         | Minus / Tolak |   |   |    |    |    |    |    |    |    |
|-----|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------------|---|---|----|----|----|----|----|----|----|
|     | 0       | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9             | 1 | 2 | 3  | 4  | 5  | 6  | 7  | 8  | 9  |
| 0.0 | 0.5000  | 0.4960  | 0.4920  | 0.4880  | 0.4840  | 0.4801  | 0.4761  | 0.4721  | 0.4681  | 0.4641        | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 |
| 0.1 | 0.4602  | 0.4562  | 0.4522  | 0.4483  | 0.4443  | 0.4404  | 0.4364  | 0.4325  | 0.4286  | 0.4247        | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 |
| 0.2 | 0.4207  | 0.4168  | 0.4129  | 0.4090  | 0.4052  | 0.4013  | 0.3974  | 0.3936  | 0.3897  | 0.3859        | 4 | 8 | 12 | 15 | 19 | 23 | 27 | 31 | 35 |
| 0.3 | 0.3821  | 0.3783  | 0.3745  | 0.3707  | 0.3669  | 0.3632  | 0.3594  | 0.3557  | 0.3520  | 0.3483        | 4 | 7 | 11 | 15 | 19 | 22 | 26 | 30 | 34 |
| 0.4 | 0.3446  | 0.3409  | 0.3372  | 0.3336  | 0.3300  | 0.3264  | 0.3228  | 0.3192  | 0.3156  | 0.3121        | 4 | 7 | 11 | 14 | 18 | 22 | 25 | 29 | 32 |
| 0.5 | 0.3085  | 0.3050  | 0.3015  | 0.2981  | 0.2946  | 0.2912  | 0.2877  | 0.2843  | 0.2810  | 0.2776        | 3 | 7 | 10 | 14 | 17 | 20 | 24 | 27 | 31 |
| 0.6 | 0.2743  | 0.2709  | 0.2676  | 0.2643  | 0.2611  | 0.2578  | 0.2546  | 0.2514  | 0.2483  | 0.2451        | 3 | 7 | 10 | 13 | 16 | 19 | 23 | 26 | 29 |
| 0.7 | 0.2420  | 0.2389  | 0.2358  | 0.2327  | 0.2296  | 0.2266  | 0.2236  | 0.2206  | 0.2177  | 0.2148        | 3 | 6 | 9  | 12 | 15 | 18 | 21 | 24 | 27 |
| 0.8 | 0.2119  | 0.2090  | 0.2061  | 0.2033  | 0.2005  | 0.1977  | 0.1949  | 0.1922  | 0.1894  | 0.1867        | 3 | 5 | 8  | 11 | 14 | 16 | 19 | 22 | 25 |
| 0.9 | 0.1841  | 0.1814  | 0.1788  | 0.1762  | 0.1736  | 0.1711  | 0.1685  | 0.1660  | 0.1635  | 0.1611        | 3 | 5 | 8  | 10 | 13 | 15 | 18 | 20 | 23 |
| 1.0 | 0.1587  | 0.1562  | 0.1539  | 0.1515  | 0.1492  | 0.1469  | 0.1446  | 0.1423  | 0.1401  | 0.1379        | 2 | 5 | 7  | 9  | 12 | 14 | 16 | 19 | 21 |
| 1.1 | 0.1357  | 0.1335  | 0.1314  | 0.1292  | 0.1271  | 0.1251  | 0.1230  | 0.1210  | 0.1190  | 0.1170        | 2 | 4 | 6  | 8  | 10 | 12 | 14 | 16 | 18 |
| 1.2 | 0.1151  | 0.1131  | 0.1112  | 0.1093  | 0.1075  | 0.1056  | 0.1038  | 0.1020  | 0.1003  | 0.0985        | 2 | 4 | 6  | 7  | 9  | 11 | 13 | 15 | 17 |
| 1.3 | 0.0968  | 0.0951  | 0.0934  | 0.0918  | 0.0901  | 0.0885  | 0.0869  | 0.0853  | 0.0838  | 0.0823        | 2 | 3 | 5  | 6  | 8  | 10 | 11 | 13 | 14 |
| 1.4 | 0.0808  | 0.0793  | 0.0778  | 0.0764  | 0.0749  | 0.0735  | 0.0721  | 0.0708  | 0.0694  | 0.0681        | 1 | 3 | 4  | 6  | 7  | 8  | 10 | 11 | 13 |
| 1.5 | 0.0668  | 0.0655  | 0.0643  | 0.0630  | 0.0618  | 0.0606  | 0.0594  | 0.0582  | 0.0571  | 0.0559        | 1 | 2 | 4  | 5  | 6  | 7  | 8  | 10 | 11 |
| 1.6 | 0.0548  | 0.0537  | 0.0526  | 0.0516  | 0.0505  | 0.0495  | 0.0485  | 0.0475  | 0.0465  | 0.0455        | 1 | 2 | 3  | 4  | 5  | 6  | 7  | 8  | 9  |
| 1.7 | 0.0446  | 0.0436  | 0.0427  | 0.0418  | 0.0409  | 0.0401  | 0.0392  | 0.0384  | 0.0375  | 0.0367        | 1 | 2 | 3  | 4  | 4  | 5  | 6  | 7  | 8  |
| 1.8 | 0.0359  | 0.0351  | 0.0344  | 0.0336  | 0.0329  | 0.0322  | 0.0314  | 0.0307  | 0.0301  | 0.0294        | 1 | 1 | 2  | 3  | 4  | 4  | 5  | 6  | 6  |
| 1.9 | 0.0287  | 0.0281  | 0.0274  | 0.0268  | 0.0262  | 0.0256  | 0.0250  | 0.0244  | 0.0239  | 0.0233        | 1 | 1 | 2  | 2  | 3  | 4  | 4  | 5  | 5  |
| 2.0 | 0.0228  | 0.0222  | 0.0217  | 0.0212  | 0.0207  | 0.0202  | 0.0197  | 0.0192  | 0.0188  | 0.0183        | 0 | 1 | 1  | 2  | 2  | 3  | 3  | 4  | 4  |
| 2.1 | 0.0179  | 0.0174  | 0.0170  | 0.0166  | 0.0162  | 0.0158  | 0.0154  | 0.0150  | 0.0146  | 0.0143        | 0 | 1 | 1  | 2  | 2  | 2  | 3  | 3  | 4  |
| 2.2 | 0.0139  | 0.0136  | 0.0132  | 0.0129  | 0.0125  | 0.0122  | 0.0119  | 0.0116  | 0.0113  | 0.0110        | 0 | 1 | 1  | 1  | 2  | 2  | 2  | 3  | 3  |
| 2.3 | 0.0107  | 0.0104  | 0.0102  |         |         |         |         |         |         |               | 0 | 1 | 1  | 1  | 1  | 2  | 2  | 2  | 2  |
|     |         |         | 0.00990 |         | 0.00964 | 0.00939 | 0.00914 |         |         |               | 3 | 5 | 8  | 10 | 13 | 15 | 18 | 20 | 23 |
|     |         |         |         |         |         |         |         | 0.00889 | 0.00866 | 0.00842       | 2 | 5 | 7  | 9  | 12 | 14 | 16 | 18 | 21 |
| 2.4 | 0.00820 | 0.00798 | 0.00776 | 0.00755 | 0.00734 |         |         |         |         |               | 2 | 4 | 6  | 8  | 11 | 13 | 15 | 17 | 19 |
|     |         |         |         |         |         | 0.00714 | 0.00695 | 0.00676 | 0.00657 | 0.00639       | 2 | 4 | 6  | 7  | 9  | 11 | 13 | 15 | 17 |
| 2.5 | 0.00621 | 0.00604 | 0.00587 | 0.00570 | 0.00554 | 0.00539 | 0.00523 | 0.00508 | 0.00494 | 0.00480       | 2 | 3 | 5  | 6  | 8  | 9  | 11 | 12 | 14 |
| 2.6 | 0.00466 | 0.00453 | 0.00440 | 0.00427 | 0.00415 | 0.00402 | 0.00391 | 0.00379 | 0.00368 | 0.00357       | 1 | 2 | 3  | 5  | 6  | 7  | 8  | 9  | 10 |
| 2.7 | 0.00347 | 0.00336 | 0.00326 | 0.00317 | 0.00307 | 0.00298 | 0.00289 | 0.00280 | 0.00272 | 0.00264       | 1 | 2 | 3  | 4  | 5  | 6  | 7  | 8  | 9  |
| 2.8 | 0.00256 | 0.00248 | 0.00240 | 0.00233 | 0.00226 | 0.00219 | 0.00212 | 0.00205 | 0.00199 | 0.00193       | 1 | 1 | 2  | 3  | 4  | 4  | 5  | 6  | 6  |
| 2.9 | 0.00187 | 0.00181 | 0.00175 | 0.00169 | 0.00164 | 0.00159 | 0.00154 | 0.00149 | 0.00144 | 0.00139       | 0 | 1 | 1  | 2  | 2  | 3  | 3  | 4  | 4  |
| 3.0 | 0.00135 | 0.00131 | 0.00126 | 0.00122 | 0.00118 | 0.00114 | 0.00111 | 0.00107 | 0.00104 | 0.00100       | 0 | 1 | 1  | 2  | 2  | 2  | 3  | 3  | 4  |

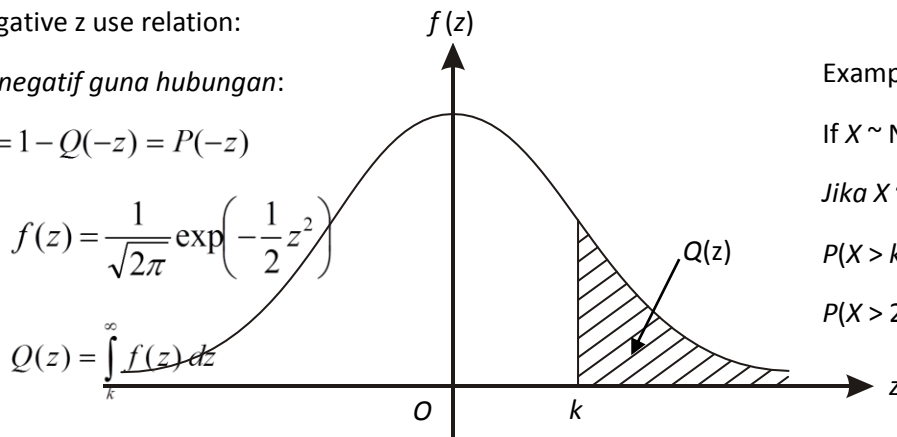
For negative z use relation:

Bagi z negatif guna hubungan:

$$Q(z) = 1 - Q(-z) = P(-z)$$

$$f(z) = \frac{1}{\sqrt{2\pi}} \exp\left(-\frac{1}{2}z^2\right)$$

$$Q(z) = \int_k^{\infty} f(z) dz$$



Example / Contoh:

If  $X \sim N(0, 1)$ , then

Jika  $X \sim N(0, 1)$ , maka

$$P(X > k) = Q(k)$$

$$P(X > 2.1) = Q(2.1) = 0.0179$$

**BAHAGIAN A**  
**SECTION A**  
**[64 markah]**  
**[64 marks]**

**Jawab semua soalan.**  
**Answer all questions.**

1. Pemboleh ubah  $u$  dan  $v$  dihubungkan dengan persamaan  $6v = 3(u + 1)^2 - 5m$  di mana  $m$  ialah pemalar.

*The variable  $u$  and  $v$  are related by the equation  $6v = 3(u + 1)^2 - 5m$  such  $m$  is a constant.*

- (a) Apabila graf  $v$  melawan  $(u + 1)^2$  diplot, satu garis lurus melalui titik  $(0,10)$  diperolehi. Cari nilai  $m$ .

*When the graph of  $v$  against  $(u + 1)^2$  is plotted, a straight line passing through the point  $(0,10)$  is obtained. Find the value of  $m$ .*

[2 markah / 2 marks]

- (b) Seterusnya, cari kecerunan dan pintasan-Y bagi garis lurus graf  $(v - u)$  melawan  $u^2$ .

*Hence, find the gradient and Y-intercept for the straight line of the graph of  $(v - u)$  against  $u^2$ .*

[2 markah / 2 marks]

Jawapan/ Answer:

- (a)

- (b)

2. (a) Selesaikan persamaan:  
Solve the equation:

$$1 + \log_2 x = \log_2(x + 5)$$

[2 markah/ 2 marks]

- (b) Diberi  $\log_5 2 = m$  dan  $\log_5 8 = n$ , ungkapkan  $\log_5 6.4$  dalam sebutan  $m$  dan  $n$ .  
Given  $\log_5 2 = m$  and  $\log_5 8 = n$ , express  $\log_5 6.4$  in terms  $m$  and  $n$ .

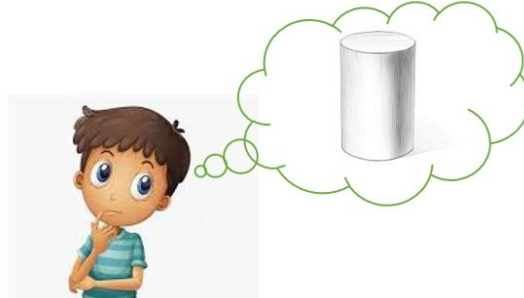
[3 markah/ 3 marks]

Jawapan/ Answer:

(a)

(b)

3. Alif ingin membuat sebuah silinder tegak tertutup daripada kad manila . Dia masih belum mengetahui jejari tapak silinder tersebut, tetapi silinder tersebut mestilah mempunyai isipadu  $54\pi \text{ cm}^3$ .  
*Alif wants to make a right, covered circular cylinder from a manila card. He still doesn't know the radius of its base, but its volume must be  $54\pi \text{ cm}^3$ .*



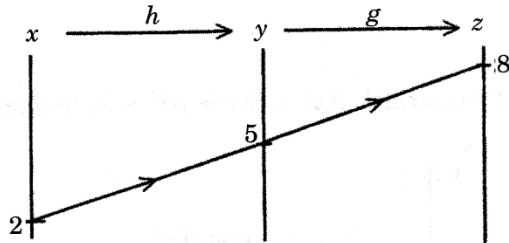
- (a) Cari jejari tapak silinder tersebut ,  $j$  , supaya luas kad manila yang diperlukan adalah minimum.  
*Find the radius of the cylinder base,  $r$ , which makes the area of the manila card needed is minimum.*
- [3 markah / 3 marks]
- (b) Hitung tinggi silinder tersebut.  
*Calculate the height of the cylinder.*
- [2 markah / 2 marks]

Jawapan / Answer :

(a)

(b)

4. (a) Dalam Rajah 1, fungsi  $h$  memetakan  $x$  kepada  $y$  dan fungsi  $g$  memetakan  $y$  kepada  $z$ .  
*In Diagram 1, the function  $h$  maps  $x$  to  $y$  and the function  $g$  maps  $y$  to  $z$ .*



Rajah 1/ Diagram 1

Namakan fungsi komposit yang memetakan nombor 8 kepada 2.  
*Name the composite function that maps the number 8 to 2.*

[1 markah/ 1 mark]

- (b) Diberi fungsi  $g(x) = 3x - 10$  dan  $h(x) = \frac{kx+1}{2}$  dengan  $k$  ialah pemalar.  
 Jika  $gh(m) = 2$ , ungkapkan  $k$  dalam sebutan  $m$ .

*Given function  $g(x) = 3x - 10$  and  $h(x) = \frac{kx+1}{2}$  where  $k$  is a constant.  
 If  $gh(m) = 2$ , express  $k$  in terms of  $m$ .*

[3 markah/ 3 marks]

Jawapan/ Answer:

(a)

(b)

5. Sebiji bola telah disepak ke langit oleh seorang kanak-kanak. Ketinggian bola dari tanah  $h$ , dalam meter selepas  $t$  saat diberi oleh persamaan  $h = 5 + 8t - 2t^2$ .  
*A ball is punted into the air by a child. The height of the ball from the ground  $h$ , in metres, after  $t$  seconds is given by the equation  $h = 5 + 8t - 2t^2$ .*

- (a) Apakah ketinggian bola itu selepas 1 saat?

*How high is the ball after 1 second?*

[1 markah/ 1 mark]

- (b) Cari ketinggian maksimum yang boleh dicapai oleh bola tersebut

*Find the maximum height of the ball.*

[2 markah/ 2 marks]

- (c) Bilakah bola tersebut mencapai ketinggian maksimum itu?

*When does the ball reach its maximum height?*

[1 markah/ 1 mark]

- (d) Berapa lamakah bola tersebut berada pada ketinggian melebihi 11 m?

*How long does the ball stay above 11 m ?*

[2 markah/ 2 marks]

Jawapan/ Answer:

(a)

(b)

(c)

(d)



6. (a) Cari julat nilai  $x$  bagi  $x^2 + x \geq \frac{3}{4}$ .  
*Find the range of values of  $x$  for  $x^2 + x \geq \frac{3}{4}$ .*
- (b) Bentukkan persamaan kuadratik jika punca-puncanya ialah  $a$  dan  $\frac{1}{a^2}$  dengan keadaan  $a$  ialah pemalar.  
*Form a quadratic equation if the roots are  $a$  and  $\frac{1}{a^2}$  where  $a$  is a constant.*

[5 markah/ 5 marks]

Jawapan/ Answer:

(a)

(b)

7. (a) Diberi  $y = \frac{x^2}{x-1}$ , tunjukkan bahawa  $\frac{dy}{dx} = \frac{x(x-2)}{(x-1)^2}$ .

*Given that  $y = \frac{x^2}{x-1}$ , show that  $\frac{dy}{dx} = \frac{x(x-2)}{(x-1)^2}$ .*

Seterusnya, cari nilai  $\int_0^2 \frac{4x(x-2)}{(x-1)^2}$ .

*Hence, find the value of  $\int_0^2 \frac{4x(x-2)}{(x-1)^2}$ .*

[3 markah/ 3 marks]

(b) Diberi  $\frac{d^2y}{dx^2} = 12x + 5$ , apabila  $x = -1$ ,  $y = -2$  dan  $\frac{dy}{dx} = 1$ ,

cari  $y$  dalam sebutan  $x$ .

*Given that  $\frac{d^2y}{dx^2} = 12x + 5$ , when  $x = -1$ ,  $y = -2$  and  $\frac{dy}{dx} = 1$ , find  $y$  in terms of  $x$ .*

[3 markah/ 3 marks]

Jawapan/ Answer:

(a)

(b)

8. (a) Swee Eng ingin membeli beberapa botol cat minyak dengan warna yang berlainan untuk menyiapkan projek Pendidikan Seninya. Jika Swee Eng ingin mendapat 36 warna baharu dengan mencampurkan dua warna yang dibeli, cari bilangan botol cat minyak yang perlu dibeli.  
*Swee Eng wants to buy several tins of oil paint for her art project. If she wants to get 36 new colours after mixing two colours she bought, find the number of tins of oil paint that need to buy.*

[3 markah/ 3 marks]

- (b) Sofia telah menerima 8 biji manik yang berlainan warna daripada rakannya. Dia ingin membentuk seutas rantai dengan manik-manik ini.  
*Sofia received 8 beads with different colours from her friend. She would like to make a necklace with these beads.*

Cari  
*Find*

- (i) bilangan rantai yang berlainan yang dapat dibentuk dengan menggunakan kesemua manik ini.  
*the number of different necklace that can be made using all the beads.*

[2 markah/ 2 marks]

- (ii) bilangan rantai yang berlainan yang dapat dibentuk dengan menggunakan sekurang- kurangnya 6 daripada 8 manik tersebut.  
*number of different necklace that can be made using at least 6 from the 8 beads.*

[3 markah/ 3 marks]

Jawapan/ Answer:

(a)

(b)

9. (a) Dalam suatu ujian Matematik, 25% daripada pelajar gagal mencapai 50 markah. Jika 10 orang pelajar dipilih, hitung kebarangkalian bahawa **tidak lebih** 8 orang mencapai 50 markah dan ke atas.

*In a Mathematics test, 25% of the students who sat for the test failed to obtain 50 marks. If 10 students are selected from those who sat for the test, find the probability that **at most** 8 of them obtain 50 marks and above.*

[4 markah/ 4 marks]

- (b) Dalam sekumpulan guru, min dan varians bagi bilangan guru yang memiliki sebuah kereta Proton ialah 6 dan 2.4 masing-masing. Cari kebarangkalian seorang guru yang dipilih secara rawak memiliki sebuah kereta Proton.  
*In a group of teachers, the mean and variance of the number of teachers who own a Proton car are 6 and 2.4 respectively. Find the probability that a teacher chosen at random owns a Proton car.*

[2 markah/ 2 marks]

Jawapan/ Answer:

(a)

(b)

10. (a) Selesaikan persamaan  
*Solve the equation*

$$4^x \times 16^{x-2} = \frac{1}{64}$$

[3 markah/ 3 marks]

- (b) Luas sebuah segitiga bersudut tegak ialah  $(-2 + 20\sqrt{3}) \text{ cm}^2$ . Satu daripada sisinya mempunyai panjang  $(8 - 2\sqrt{3}) \text{ cm}$ . Cari panjang sisi yang berserenjang dengannya dalam bentuk  $a + b\sqrt{3}$ .

*The area of right-angled triangle is  $(-2 + 20\sqrt{3}) \text{ cm}^2$ . One of its sides has length  $(8 - 2\sqrt{3}) \text{ cm}$ . Find the length of the side perpendicular to it in the form  $a + b\sqrt{3}$ .*

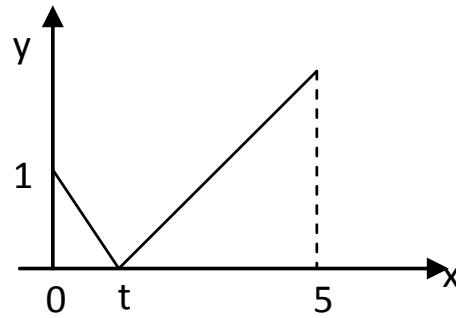
[3 markah/ 3 marks]

Jawapan / Answer:

(a)

(b)

- 11 (a) Rajah 2 menunjukkan graf bagi fungsi  $f(x) = |1 - 3x|$  bagi domain  $0 \leq x \leq 5$ .  
 Diagram 2 shows the graph of function  $f(x) = |1 - 3x|$  for the domain  $0 \leq x \leq 5$ .



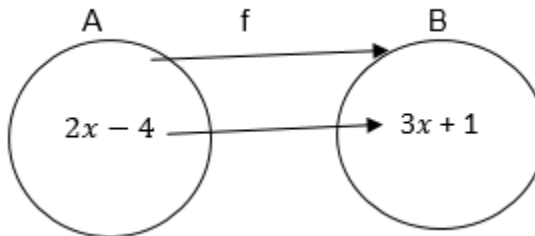
Rajah 2/ Diagram 2

Nyatakan  
 State

- i) nilai  $t$   
 the value of  $t$
- ii) julat  $f(x)$  yang sepadan dengan domain yang diberi  
 the range of  $f(x)$  corresponding to the given domain.

[2 markah/ 2 marks]

- (b) Rajah 3 menunjukkan fungsi  $f$  yang memetakan set A kepada set B.  
 Diagram 3 shows function  $f$  that maps set A to set B



Rajah 3/ Diagram 3

Cari fungsi  $f(x)$ .  
 Find function  $f(x)$ .

[3 markah/ 3 marks]

Jawapan / Answer

(a)

(b)

12. Diberi  $\sin B = q$ , dengan keadaan  $q$  ialah pemalar dan  $90^\circ \leq B \leq 180^\circ$ . Cari dalam sebutan  $q$ ,  
Given  $\sin B = q$ , where  $q$  is a constant and  $90^\circ \leq B \leq 180^\circ$ . Find in terms of  $q$ ,

(a)  $\sec B / \sec B$

(b)  $\cos^2 \frac{B}{2} / \cos^2 \frac{B}{2}$

[4 markah / 4 marks]

Jawapan / Answer:

(a)

(b)

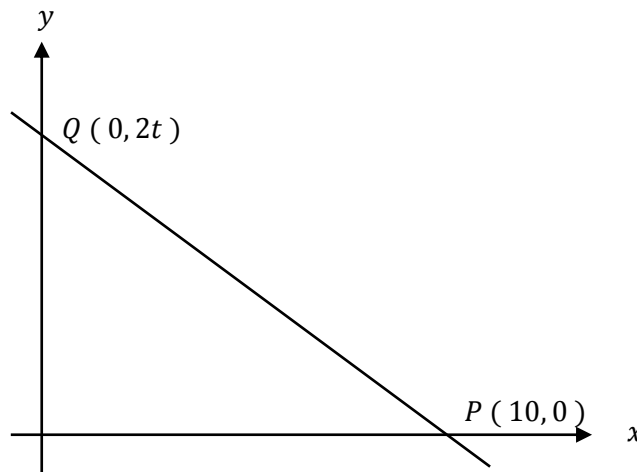
**BAHAGIAN B**  
**SECTION B**  
**[16 markah]**  
**[16 marks]**

**Jawab dua soalan daripada bahagian ini.**  
**Answer dua questions from this section.**

13. (a) Titik  $P(8, s)$  membahagi garis  $M(5, 6)$  dan  $N(r, 1)$  dengan keadaan  $2MP = 3PN$ .  
*A point  $P(8, s)$  divides the line joining  $M(5, 6)$  and  $N(r, 1)$  such that  $2MP = 3PN$ .  
Cari nilai bagi  $r$  dan  $s$ .  
*Find the values of  $r$  and  $s$ .**

[4 markah / 4 marks]

- (b) Dalam rajah di bawah, garis lurus  $PQ$  mempunyai persamaan  $\frac{x}{10} + \frac{y}{6} = 1$ .  
 $PQ$  menyalang paksi- $x$  di titik  $P$  dan menyalang paksi- $y$  di titik  $Q$ .  
*In diagram below, the straight line  $PQ$  has an equation  $\frac{x}{10} + \frac{y}{6} = 1$ .  
 $PQ$  intersects the  $x$ -axis at point  $P$  and  $y$ -axis at point  $Q$ .*



Cari / Find

- (i) nilai  $t$   
*the value of  $t$*

- (ii) persamaan garis lurus yang melalui  $Q$  dan berseranjang dengan  $PQ$ .  
*the equation of the straight line that passes through  $Q$  and is perpendicular to  $PQ$ .*

[4 markah / 4 marks]



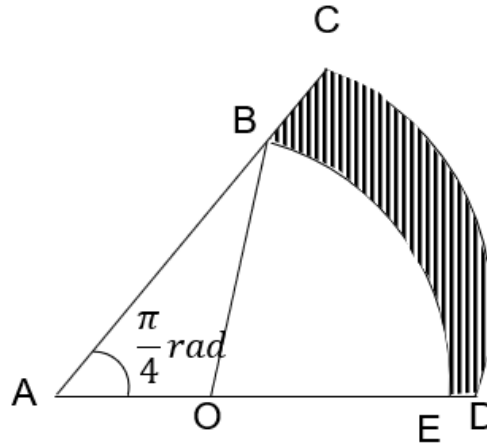
Jawapan / Answer:

(a)

(b) (i)

(ii)

14. Rajah 4 menunjukkan sektor  $ACD$  yang berpusat  $A$  dan berjari  $17\text{cm}$ .  $OBE$  ialah suatu sektor lain berpusat di  $O$  dan berjari  $r$ .  
*Diagram 4 shows sector  $ACD$  with centre  $A$  and a radius of  $17\text{ cm}$ .  $OBE$  is another sector with centre  $O$  and radius  $r$ .*



Rajah 4/ Diagram 4

Diberi bahawa  $BC = 3\text{ cm}$ ,  $OA = 5\text{ cm}$  dan  $\angle OAB = \frac{\pi}{4}$  radian. Hitung  
*It is given that  $BC = 3\text{ cm}$ ,  $OA = 5\text{ cm}$  and  $\angle OAB = \frac{\pi}{4}$  radians. Calculate*  
 [Guna / Use = 3.142 ]

- (a) nilai  $r$  dalam  $\text{cm}$ ,  
*value of  $r$  in  $\text{cm}$ ,* [2 markah / 2 marks]
- (b)  $\angle BOD$  dalam radian,  
 *$\angle BOD$  in radians,* [2 markah / 2 marks]
- (c) luas, dalam  $\text{cm}^2$ , rantau berlorek.  
*the area, in  $\text{cm}^2$ , of the shaded region.* [4 markah / 4 marks]

Jawapan / Answer :

- (a)

(b)

(c)

15. (a) Chong memohon pekerjaan daripada sebuah syarikat. Syarikat tersebut menawarkan gaji permulaan sebanyak RM 18 000 setahun dengan 5% kenaikan gaji tahunan daripada gaji pokok. Chong bercadang untuk menyimpan 25% daripada gajinya untuk melanjutkan pelajaran selepas bekerja selama 5 tahun. Hitung jumlah simpanan untuk pengajiannya selepas bekerja selama 5 tahun. Berikan jawapan anda betul kepada RM terhampir.
- Chong applied for a job from a company. The company offered him an initial salary of RM 18 000 per annum with 5% yearly increment from the basic salary. Chong planned to save 25% of his salary for further study after working for 5 years. Calculate his total savings for his studies after working for 5 years. Give your answer correct to the nearest RM.*

[3 markah / 3 marks]

- (b) Diberi bahawa tiga sebutan berturutan bagi suatu jangjang aritmetik ialah  $3x + 1$ , 25 dan  $x^2 - 5$ . Cari nilai  $x$  jika beza sepunya adalah lebih daripada 10. Seterusnya, tentukan sebutan pertama jika  $x^2 - 5$  adalah sebutan ke-10.
- It is given that three consecutive terms of an arithmetic progression are  $3x + 1$ , 25 and  $x^2 - 5$ . Find the value of  $x$  if the common difference is more than 10. Hence, determine the first term if  $x^2 - 5$  is the tenth term.*

[5 markah / 5 marks]

Jawapan / Answer :

(a)

(b)

**KERTAS PEPERIKSAAN TAMAT  
END OF QUESTION PAPER**