

SEKOLAH BUKIT SION – HIGH SCHOOL

AY 2020-2021

ADDITIONAL MATHEMATICS 0606

CHAPTER 2 TEST: QUADRATICS

NAME: _____ CLASS: _____ DATE: _____

INSTRUCTIONS:

1. **CHOOSE AND ANSWER ONLY 8 QUESTIONS.**
2. Use a **file paper** or **A4 paper** to answer the questions in an orderly and neat manner.
Show necessary working. Your marks may be deducted for missing necessary steps.
3. Use **black** or **blue** pen for working, use **pencil** for sketching.
Do not use highlighter or **correction tape.**
4. Once you are done, insert the **pdf printout** on the assigned page for this Chapter Test.
Scan and upload your test (**in pdf**) by “*Add work*”.

Filename format: *NameClass_C2Test* **Example:** *Emman10.5_C2Test*

5. Submit on-time. You only are given an extra 5 minutes after the specified time duration to scan and attach your files.

After the closing time, your work may NO LONGER be accepted.
You may be given a zero score.

QUESTION 01.**[3]**

Find the value of k for which the curve $y = 2x^2 - 3x + k$

(a) passes through the point $(4, -7)$,

(b) meets the x -axis at one point only.

QUESTION 02**[4]**

(a) Given that $x^2 + 2kx + 4k - 3 = 0$ has no real roots, show that k satisfies $k^2 - 4k + 3 < 0$.

(b) Solve the inequality $k^2 - 4k + 3 < 0$.

QUESTION 03**[3]**

A function f is defined, for all real x , by

$$f(x) = x - x^2.$$

Find the greatest value of $f(x)$ and the value of x for which this occurs.

QUESTION 04**[3]**

Find the values of x for which $(x - 4)(x + 2) > 7$.

QUESTION 05**[5]**

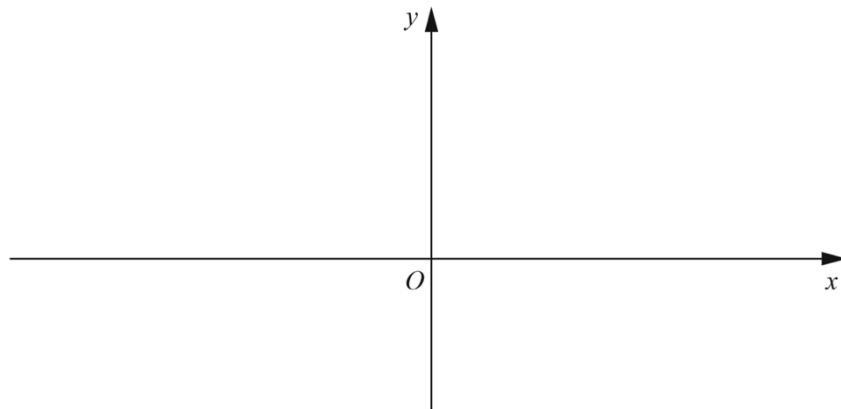
The line $2x - y + 1 = 0$ meets the curve $x^2 + 3y = 19$ at the points A and B .
Find the distance of AB .

QUESTION 06**[4]**

Find the range of values of k for which the equation $kx^2 + k = 8x - 2xk$ has 2 real distinct roots.

QUESTION 07**[7]**

- (a) On the axes below, sketch the graph of $y = |x^2 - 4x - 12|$ showing the coordinates of the points where the graph meets the axes.



- (b) Find the coordinates of the stationary point on the curve $y = |x^2 - 4x - 12|$.
- (c) Find the values of k such that the equation $|x^2 - 4x - 12| = k$ has only 2 solutions.

QUESTION 08**[5]**

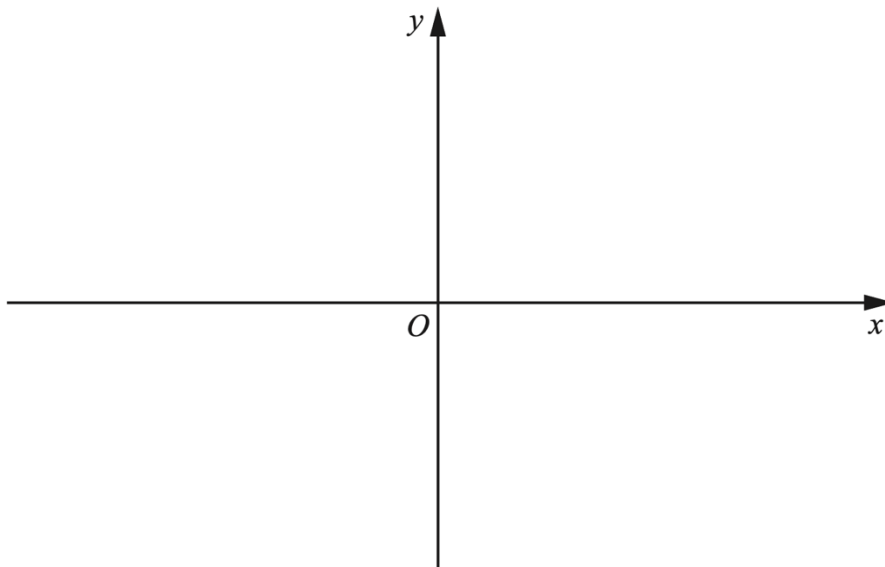
Given that $f(x) = 3x^2 + 12x + 2$,

(a) find values of a , b and c such that $f(x) = a(x + b)^2 + c$,

(b) state the minimum value of $f(x)$ and the value of x at which it occurs,

QUESTION 09**[5]**

Using symmetrical properties, sketch the graph of $y = 9 - 8x - x^2$, indicating clearly the coordinates of the intercepts and turning point.



QUESTION 10**[3]**

Find the set of values of x for which $4x^2 + 19x - 5 \leq 0$.

QUESTION 11**[5]**

Solve the simultaneous equations

$$\begin{aligned}2x^2 + 3y^2 &= 7xy, \\ x + y &= 4.\end{aligned}$$

QUESTION 12**[5]**

Find the set of values of k for which the line $y = k(4x - 3)$ does not intersect the curve $y = 4x^2 + 8x - 8$.