AICE Math P1 & P2
1.1 Graded Assignment SUMMER WORK

Name:	Period:	Date:

EXAM STYLE QUESTION:

1.

Find the set of values of k for which the line $y = 2x - k$ meets the curve $y = x^2 + kx - 2$ at two distinct points. [5]

Marking points available

Thinking the AICE Way:

How do you know when 2 graphs meet (hint: they are equal to each other!)

If you have a quadratic equations, what can you use to determine if the equations have 0, 1, or 2 solutions (hint: the discriminant)?

How do you solve a quadratic inequality (hint: you need to test points or graph)?

2.

The point C lies on the perpendicular bisector of the line joining the points A (4, 6) and B (10, 2). C also lies on the line parallel to AB through (3, 11).

   (i) Find the equation of the perpendicular bisector of AB.   [4]

   (ii) Calculate the coordinates of C.   [3]

Marking points available

Thinking the AICE Way:

Graph the situation to visualize what you are looking for.

Remember the Midpoint formula, slope formula and point slope form of a linear equations.

What do you know about a perpendicular bisector?

What do you know about parallel lines?

3.

(i) Find the quotient when $6x^4 - x^3 - 26x^2 + 4x + 15$ is divided by $(x^2 - 4)$, and confirm that the remainder is 7. [3]

(ii) Hence solve the equation $6x^4 - x^3 - 26x^2 + 4x + 8 = 0$. [3]

Marking points available
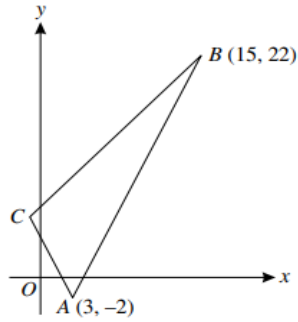
Thinking the AICE Way:

Do you use long division, or can you use synthetic?

What is the remainder if you divide with a factor?

What is a depressed polynomial?

What is the maximum number of real solutions this equation can have?

4.

The diagram shows a triangle ABC in which A is $(3, -2)$ and B is $(15, 22)$. The gradients of AB, AC and BC are $2m$, $-2m$ and m respectively, where m is a positive constant.

  (i) Find the gradient of AB and deduce the value of m.   [2]

  (ii) Find the coordinates of C.   [4]

The perpendicular bisector of AB meets BC at D.

  (iii) Find the coordinates of D.   [4]

Marking points available

You're on your own!