



JOHN EDMONDSON HIGH SCHOOL

Assessment Notification

Faculty: Mathematics Course: Mathematics Extension 1 Year: 11

Assessment Task: 1

Assessment Weighting: 20% Due: Term 1 Week 6 Date: 8/03/2024

Task Type: Hand in Task In Class Task Practical Task

Outcomes assessed (NESA)
ME 11-1; ME 11-2; ME 11-6; ME 11-7 PLEASE NOTE: further information related to these codes can be found on the NESA website
Task Description/Overview
This assignment involves the use of Polynomials to solve problems. All parts of the task are to be completed individually, and handed in at the start of the lesson on the 10 th of March. The task also involves an in class component that will occur during the period of the 10 th .
Detailed Assessment Task Description
An assignment handout is attached to this notification. You will be assessed on how well you: - accurately solve a variety of problems based on the scenario - select and use appropriate mathematical process, technologies and language to investigate, organise and interpret problems - provide reasoning and justification related to the problems -the Handout component will make up 50% of the assessment. The in class component will make up the remaining 50% of the task and will be in the form of a 30 minute exam made up of identical or very similar questions to those present in the handin component.

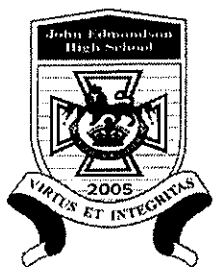
Assessment Criteria		
Grade	Description	Mark Range
Outstanding (O)	The student demonstrates extensive knowledge of content and understanding of course concepts, and applies highly developed skills and processes in a wide variety of contexts. In addition the student demonstrates creative and critical thinking skills using perceptive analysis and evaluation. The student effectively communicates complex ideas and information.	85% - 100%

High (H)	The student demonstrates thorough knowledge of content and understanding of course concepts, and applies well-developed skills and processes in a variety of contexts. In addition the student demonstrates creative and critical thinking skills using analysis and evaluation. The student clearly communicates complex ideas and information.	65% - 84%
Sound (S)	The student demonstrates sound knowledge of content and understanding of course concepts, and applies skills and processes in a range of familiar contexts. In addition the student demonstrates skills in selecting and integrating information and communicates relevant ideas in an appropriate manner.	45% - 64%
Basic (B)	The student demonstrates a basic knowledge of content and understanding of course concepts, and applies skills and processes in some familiar contexts. In addition the student demonstrates skills in selecting and using information and communicates ideas in a descriptive manner.	25% - 44%
Limited (L)	The student demonstrates an elementary knowledge of content and understanding of course concepts, and applies some skills and processes with guidance. In addition the student demonstrates elementary skills in recounting information and communicating ideas.	0% - 24%

Satisfactory completion of courses

A course has been satisfactorily completed, when the student has:

- Followed the course developed/endorsed by the NSW Educational Standards Authority (NESA)
- Applied himself/herself with diligence and sustained effort to the set tasks and experiences provided in the course.
- Achieved some or all of the course outcomes



JOHN EDMONDSON HIGH SCHOOL

Mathematics Department
Year 11 Mathematics Extension 1
Assessment Task 1
Term 1 2024
Weighting 20%

Polynomials Assignment

Due Date: Friday 9th March 2024

This assignment must be submitted using A4 paper with your full name clearly written on all pages.

1.	Given $P(x) = x^3 + 8x^2 - 5x$ and $G(x) = -x^3 - x^2 + 3x - 2$. Fully simplify the following expressions. (a) $P(x) + G(x)$ (b) $P(x) - G(x)$ (c) $P(x) \times G(x)$	3 marks
2.	Solve for all real values of x . $2x^4 - 9x^2 + 4 = 0$	4 marks
3.	Use the Remainder Theorem to find the remainder when $P(x) = 2x^4 - 5x^3 + 6x^2 - 7$ is divided by $x + 2$.	2 marks
4.	For the polynomial $P(x) = 7x^4 - 3x^2 + x - 10$, determine the a) Leading co-efficient. b) Leading term. c) Degree of the polynomial. d) Constant term.	4 marks
5.	$P(x)$ is a monic polynomial of degree 3. Dividing by the term $x^2 - 4$ gives a remainder of -5 . Given $P(5) = 2$, find the polynomial $P(x)$.	3 marks

6.	<p>For the polynomial $P(x) = 2x^3 - 3x^2 - 11x + 6$;</p> <p>a) Find a factor of the Polynomial, $P(x)$.</p> <p>b) Fully factorise $P(x)$ by first dividing the polynomial by your factor in part a).</p> <p>c) Graph the polynomial clearing showing all x and y intercepts.</p> <p>d) Use a graphing software (eg. DESMOS) to graph the above polynomial and include a print out of it as a comparison to your own graph.</p>	4 marks
7.	<p>Consider the polynomial $P(x) = x^4 + 4x^3 - 7x^2 - 10x$.</p> <p>a) Fully factorise.</p> <p>b) Graph the polynomial on a number plane, by using you factorised expression or otherwise.</p> <p>c) With the aid of your graph, solve the in-equation $x^4 + 4x^3 - 7x^2 - 10x \geq 0$.</p>	4 marks
8.	Sketch a polynomial which has a double root at $x = 2$ and a leading term x^4	2 marks
9.	The polynomial $P(x) = 3x^3 + ax^2 + x + b$ has $(x - 1)$ as a factor and leaves a remainder of -60 when divided by $(x + 2)$. Find the values of a and b .	4 marks
10.	<p>Let α, β and γ be roots of the equation $x^3 - 3x^2 + 4x + 2 = 0$. Find the value of;</p> <p>a) $\alpha + \beta + \gamma$</p> <p>b) $\alpha\beta\gamma$</p> <p>c) $\frac{1}{\alpha} + \frac{1}{\beta} + \frac{1}{\gamma}$</p> <p>d) $\alpha^2 + \beta^2 + \gamma^2$</p>	4 marks
11.	<p>α, β and γ are the zeroes of the monic polynomial $P(x)$. Given;</p> $\alpha + \beta + \gamma = 1$ $\alpha\beta + \beta\gamma + \alpha\gamma = 3$ $\alpha\beta\gamma = -4$ <p>Find $P(x)$.</p>	2 marks
12.	<p>Find a, b and c, given that the two polynomials are identically equal.</p> $ax(x + 1)(x + 2) + bx(x + 1) + cx + d = 4x^3 - x^2 + 3.$	4 marks

END OF ASSIGNMENT