

IB Standard Level Unit 2 Exam 4 (Chapter 2) Study Guide

Exam 4 will be administered on Wednesday November 7 or Thursday November 8. You will be allowed to use your SL packet; however, this is a **NON-CALCULATOR** exam.

<i>Section</i>	<i>Topic</i>	<i>Problems</i>
2.1	Writing an equation of a parabola given the vertex and a coordinate point on the graph	27-34
2.1	Write a quadratic in vertex form	21-26
2.3	Long Division	1-14
2.5	Find the polynomial function given the roots	37-42

The majority of this exam focuses on sketching polynomials (Section 2.2/2.3) and rational functions (2.6/2.7) by hand. Answer all the questions below for each polynomial and rational function. Check your answers using your graphing utility.

For each polynomial, **(a)** write it as linear factors, **(b)** find all the roots, **(c)** Sketch the graph with at least five total points.

1. $f(x) = x^3 - 9x$ 2. $h(x) = -x^4 + 9x^2 - 20$ 3. $k(x) = 2x^3 + 3x^2 - 8x + 3$

4. $l(x) = 3x^3 - 5x^2 + 6x - 4$ 5. $m(x) = 4x^4 - 17x^2 + 4$ 6. $x^4 - x^3 - 2x - 4$

For each rational function sketch each graph by hand with at least 5 total points and find all that apply: **(a)** y-intercept(s), **(b)** x-intercept(s), **(c)** vertical asymptote(s), **(d)** horizontal asymptote(s), **(e)** slanted asymptote, and **(f)** holes in the graph.

1. $f(x) = \frac{x^2 - 16}{x - 4}$ 2. $h(x) = \frac{x^2 - 9}{x - 3}$ 3. $k(x) = \frac{2x - 1}{x^2 + 1}$

4. $l(x) = \frac{x^2 - x - 2}{x - 1}$ 5. $m(x) = \frac{x^2 - x}{x + 1}$ 6. $\frac{x^2 - 9}{x^2 - 2x - 3}$