CONCORDIA UNIVERSITY
Department of Mathematics & Statistics

Course	**Number**		**Section(s)**
Mathematics	206/1		All
Examination	**Date**	**Time**	**Pages**
Midterm	May 2012	1 Hour 30 minutes	2
Instructors			**Course Examiner**
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Special Instructions

▷ **Only approved calculators are allowed.**

MARKS

[4] **1.** Simplify the expressions below. Do not use a calculator.

(a) $(27^{\frac{1}{3}}\sqrt{16})^2$ (b) $5\sqrt{12} - 2\sqrt{27}$

[4] **2.** Rationalize the denominator:

(a) $\dfrac{\sqrt{5}+1}{\sqrt{5}-1}$ (b) $\dfrac{3\sqrt{3}}{2+\sqrt{3}}$

[6] **3.** Simplify the expressions:

(a) $x(x^2+2x+1)-(2x+2)$ (b) $\dfrac{4x+12}{x^2+3x}$

[8] **4.** Factor the polynomials completely:

(a) $3x^2+10x+8$ (b) $16-4x^2$

[3] **5.** Use synthetic division to determine whether $(x+3)$ is a factor of $2x^3+9x^2+8x-3$.

[6] **6.** Solve the equations:

(a) $2(x+4)+3x=6$ (b) $x^3+6x^28x=0$ (c) $\sqrt{x-4}=16$

PLEASE TURN OVER

[6] **7.** Solve the inequalities, express your answer using set notation or interval notation:

(a) $10 < 2x - 4 < 14$ (b) $-3|x + 2| \leq 15$

[4] **8.** (a) Write an equation for a line that is parallel to the line $y = 2x + \frac{1}{2}$ and passing through the point $(4, 5)$.

(b) Write the equation of the circle with center $(2, -3)$ and radius 5.

[4] **9.** Find the domain of the functions (do not graph):

(a) $f(x) = \sqrt{3x + 2}$ (b) $g(x) = \dfrac{3}{x^2 - x - 2}$

[5] **10.** Test the equation $4x^2 + 2y^2 = 16$ for symmetry. Indicate whether the graph is symmetric with respect to the x-axis, y-axis, or the origin.