



What You Should Know To Place Into MTH 180

Introduction: This document is intended to help you prepare to take the COMPASS test and place into MTH 180: Precalculus. If you wish to place into MTH 180 you should be able to complete most of the following problems correctly. The answers to the following questions can be found at the bottom of the last page of this document. It is strongly advised that you DO NOT take the math COMPASS test on the same day as orientation. It is further advised that you do not take the math portion of the COMPASS test on the same day that you take the reading or writing portions of the COMPASS test.

Studying for the COMPASS math test before you take it will help you insure that you are placed into a course that is at the right level for you.

1) You should know everything on “What You Should Know To Place Into MTH 176”.

Including: operations on polynomials, factoring, functions, simplifying radicals, Laws of Exponents and Logarithms, operations with Complex Numbers, operations on Rational Expressions, and translating applications into equations. It will also help you considerably if you are comfortable using a graphing calculator.

2) You should know, and be able to apply the zero product rule, and The One-to-One Properties for logarithms and exponents.

Zero Product Rule: If $a \cdot b = 0$, then $a = 0$, $b = 0$

One-to-One Properties: If $a^x = a^y$, then $x = y$ and If $\log_b x = \log_b y$ then, $x = y$

3) You should know how to compute domains and ranges for rational, radical, logarithmic, and exponential expressions.

Example problems:

(a) $F(x) = \frac{1}{x^2 - 4}$ (b) $f(x) = \sqrt{18 - x^2}$ (c) $g(x) = 10 + 10\log(x)$ (d) $g(x) = e^{2x} + 1$

4) You should know how to solve polynomial, logarithmic, and exponential equations.

Example problems:

(a) $x^4 - 81 = 0$ (b) $\log_{27} x^2 = \frac{2}{3}$ (c) $\frac{a^{x^2}}{a^{8x}} = \frac{1}{a^{16}}$



5) You should be able to choose the function which accurately models given data.

Example problems:

(a) Given the table, does the function model data? $Y=20-3\log(x+1)$

x	y
0	20
9	17
42.5	15.1
51	14.9
99	14

Answers to example problems:

3a) Domain: $(-\infty, -2) \cup (-2, 2) \cup (2, \infty)$ Range: $(-\infty, 0) \cup (0, \infty)$

3b) Domain: $18 - x^2 \geq 0$ so, $[-3\sqrt{2}, 3\sqrt{2}]$ Range: $[0, 3\sqrt{2}]$

3c) Domain: $(-\infty, \infty)$ Range: $(1, \infty)$

4a) $x = \pm 3i, \pm 3$ 4b) $x=3$ 4c) $x=4$

5) yes it does. Easy to check on the table of a graphing calculator!