

Tompkins Cortland Community College – Mathematics Placement Program

MATH 201 (Calculus 1) Qualifying Test -

Practice Problems – Page 1

This practice test has been developed for your use to help prepare you to take the college's placement test for Math 201 (Calculus I) and to give you an idea of the skills necessary to be successful in that course. You will be expected to have a solid foundation in algebra skills. The questions below are similar to, but not identical to the questions on the placement test. If these questions seem too difficult or too easy for you, reconsider taking Math 201 and speak with an advisor about alternatives. Answers (on separate sheet) should be consulted AFTER completion.

Answers and math concepts are given on separate sheet.

1. Write in exponential form: (one variable to a power):

$$f(x) = \frac{\sqrt{x}}{x}$$

2. Evaluate and simplify:

$$\text{If } f(x) = x^2 - 1, \\ \text{find } f(x+3)$$

3. If $f(x) = \sin 3x$, evaluate: (give an exact value)

$$f\left(\frac{4\pi}{9}\right) =$$

4. If: $f(x) = x^2 + 1$ and $g(x) = 2x - 2$,

$$\text{find and simplify } f(g(x)) \\ \text{(also known as } (f \circ g)(x))$$

5. If $f(x) = \sqrt{x-7} + 3$,

$$\text{find } f^{-1}(x) =$$

6. Which numbers are not in the domain of

$$\frac{6x^2}{x^2 - 9}$$

7. Write as a single fraction and simplify:

$$\frac{1}{x+5} - \frac{1}{x-3}$$

8. Find the equation of a line through the point (1, -2) that is parallel to $2x + 5y = 20$. Write your answer in $y = mx + b$ form.

9. Solve for x:

$$0 = \frac{2x-1}{3x^2+1}$$

10. Solve for x. Give the exact values in radians in terms of π .

$$3 \tan x + \sqrt{3} = 0$$

11. Solve for x.

$$8x^3 - 6x^2 = 5x$$

12. Find the vertex of the parabola:

$$y = x^2 + 10x + 30$$