

## Algebra Review Problems

The following problems are provided as examples of some of the algebra concepts and topics that are tested on the mathematics placement test used at UNCW. They are not intended to be a complete summary of all topics covered on the test or representative of prerequisite material for any UNCW mathematics course. See our website ([www.uncw.edu/mathlab](http://www.uncw.edu/mathlab)) for more information about the placement test.

- Let  $f(x) = 4x^3 + 2x^2 - 16x + 10$  and  $g(x) = 2(x-1)^2$ . Find (and simplify)
  - $f(-1)$
  - $(f+g)(3)$
  - $f(x+2)$
  - $\frac{f(4)}{g(0)}$
  - $\frac{f(x)}{g(x)}$
  - $f[g(2)]$
  - $f(x) - 4g(x)$
  - $2f(x) - [f(x) \cdot g(x)] + 1$
- If  $f(x) = kx^2 - 2x + 1$  and  $f(2) = -7$ , then find  $f(5)$ .
- Find  $x$ :
  - $\log_3(9) = x$
  - $6^x = 216$
- $\frac{7!}{4!2!} = ?$
- If  $i^2 = -1$ , find (and put in  $a + bi$  form)
  - $(-3i)^2$
  - $i^{89}$
  - $(4-i)(-3+2i)$
- If  $A = \begin{bmatrix} 1 & -3 \\ 2 & 5 \end{bmatrix}$  and  $B = \begin{bmatrix} 4 & 0 \\ -3 & -1 \end{bmatrix}$ , then what is  $A - 3B$ ?
- The demand for a certain vendor's goods is given by  $d = 200 - 40q$ , where  $q$  is the number of items produced. The cost of producing the product is given by  $c = 500 + 10q$ . What is the cost as a function of the demand?
- Write a mathematical equation that is equivalent to the sentence "If 2 is subtracted from the reciprocal of  $x$ , the result is the product of  $x$  and  $a$ ."
- Which of the following is a logical consequence of the 3 statements given below?
  - All zabs are blue.
  - Not all yeeks are blue.
  - Some jilps are zabs.
  - No jilps are yeeks.
  - Some zabs are yeeks.
  - No yeeks are zabs.
  - Some jilps are blue.
  - No yeeks are blue.

