Challenge Exam Information Sheet
10-804-118 Intermediate Algebra with Apps

Course Information

Course # Title	10804118 Intermediate Algebra with Applications
Credits	4
Instructional Area	Mathematics
Instructional Level	Associate Degree
Division	General Studies

Click here Intermediate Algebra with Applications to review the detailed course outcome summary for this course to determine if you are prepared to take this challenge exam.

Challenge Exam Format

Number/Format of Questions:	50 Questions.
Passing Score:	120 Points (80 Percent of Total Points)
Time Allowed For Completion:	Allow at least 2 hours for the exam, you may take more time as needed - 4 hours maximum
Materials Allowed In Testing Room:	Northwood Tech will provide a scientific calculator you do not choose to bring your own (you cannot use a phone, tablet or any device that is programmable, has a camera, or connectivity; graphing calculators are prohibited) Hand in test when finished and any scratch paper used for additional work shown.
When/How Results Will Be Available:	Results will be emailed to your Northwood Tech email account within one week of taking the exam.

Challenge Exam Guidelines

Understand that Challenge Exams are evaluative, rather than learning, experiences. Results indicate only whether a student has earned credit for prior learning: pass or fail. No score is available, nor is a report of how a student performed on any piece of the exam.

- Prior to taking the challenge exam, you must:
  - ✓ be an admitted student.
  - ✓ pay a non-refundable fee of $50.
- You may only attempt this Challenge Exam once in a 12-month period.
- The exam may be scheduled before or after the course begins, but must be completed within the first seven calendar days from the course start date.
- Reasonable accommodations for persons with disabilities will be made to ensure access to academic programs, activities, services and employment in accordance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA), Amendments Act of 2008 (ADAA). Students with a documented disability must request accommodations by contacting the campus Accommodation Specialist and following required steps to obtain accommodations at the post-secondary level.
- If you are enrolled in the course and successfully complete the Challenge Exam, you will receive a 100 percent tuition refund for the course.

PLEASE CONTACT STUDENT SERVICES FOR INFORMATION ON THE PROCESS FOR SCHEDULING AN EXAM

NOTE: A reduced credit load may affect your financial aid and/or insurance eligibility if you successfully complete a Challenge Exam. Please contact your advisor or the financial aid office for more information.

Information and Sample Questions

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Course Competencies

1. Apply properties of real number systems
2. Evaluate expressions
3. Solve linear equations
4. Solve linear inequalities
5. Use the Cartesian coordinate system
6. Demonstrate graphing skills on the Cartesian coordinate plane
7. Analyze linear equations
8. Apply properties of functions and relations
9. Solve systems of equations and inequalities
10. Apply properties of exponents
11. Perform basic operations with polynomials
12. Graph functions and relations
13. Factor polynomials
14. Solve equations using factoring
15. Evaluate rational expressions
16. Solve equations involving rational expressions
17. Evaluate radical expressions
18. Solve radical equations
19. Operate within the complex number system
20. Solve quadratic equations
21. Use Algebra functions
22. Apply properties of exponential and logarithmic functions

Sample Exam Questions and Formulas

The test includes questions for each of the competencies above. In most cases, you will be required to work out the solution. Sample questions and solutions are provided for your review.

Formulas

You are expected to have a working knowledge of the following formulas. You cannot use this formula sheet during the exam.

Slope of a line: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Slope – intercept form of a linear equation: $y = mx + b$

Point – slope form of a linear equation: $y - y_1 = m(x - x_1)$

Standard form of a linear equation: $Ax + By = C$

Midpoint of a segment: $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

Distance between two points: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Pythagorean theorem: $a^2 + b^2 = c^2$

Difference of perfect squares: $a^2 - b^2 = (a - b)(a + b)$

Difference of perfect cubes: $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

Sum of perfect cubes: $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$

Perfect square trinomial: $a^2 + 2ab + b^2 = (a + b)^2$

Quadratic formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

General form of an equation of a circle: $(x - h)^2 + (y - k)^2 = r^2$

Sample Questions

1. Solve for x: $\frac{2}{3}x - \frac{1}{6} = 3 - \frac{1}{2}x$
2. Solve the inequality and graph the solution set. $-3x + 7 \geq 2x - 3$
3. Determine the slope and x and y-intercepts of the following equation. $-5x + 2y = 20$
4. Solve the following system of equations. Write the solution as an ordered pair.

$$x - 4y = -6$$
$$-2x + 3y = -3$$

5. Factor completely: $2x^2y - 32y^3$
6. Solve for x. Simplify the solutions. $3x^2 + 2x = 5$
7. Simplify: $\frac{x^2-3x-10}{x^2-8x+15} \div \frac{x^2+x-2}{x^2-3x}$
8. Simplify completely: $\sqrt{50x^6y^9z}$
9. Given $f(x) = 3x^2 - x + 7$, compute $f(-4)$.
10. Simplify. $(-3x^4y^{-2})^2$ Write the answer with only positive exponents.

Answers to Sample Questions

1. $x = \frac{19}{7}$
2. $x \leq 2$

3. $m = \frac{5}{2}$ $(-4,0)$ $(0,10)$
4. $(6,3)$
5. (x - 4y) (x + 4y)
6. $\left\{-\frac{5}{3}, 1\right\}$
7. $\frac{x}{x-1}$
8. $5x^3y^4\sqrt{2yz}$
9. $f(-4) = 59$
10. $\frac{9x^8}{y^4}$