Student Name: _________________________________

Student ID #: ____________________ Section #: ___________

Teacher’s Name: __________________________

**Important Instructions:**

1. You may use a scientific calculator that does not have programming or graphing capabilities.
2. You may **NOT borrow** a calculator from anyone.
3. You may NOT use notes or any textbook.
4. There should be **NO talking** during the examination.
5. Your exam will be taken immediately if your mobile phone is seen or heard.
6. Looking around or making an attempt to cheat will result in your exam being cancelled.
7. Provide an organized complete solution for each Question.
8. This examination has 11 problems. Make sure your paper has all these problems.

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</table>
1. (4 points) Evaluate \( \frac{6-3|x-2|}{|-2|-1} \) for \( x = -3 \).

2. (4 points) Find \( \{1,2,3,4,5\} \cap \{7,6,5,4\} \cup \{4,2,1\} \)

3. (12 points) Simplify each of the following exponential expressions. (write all expressions without negative exponents)
   
   (i) \( (6x^4)^2 \)

   (ii) \( (2xy^{-2})(-2x^{-1}y) \)

   (iii) \( (25x^4y^6)^{1/2} (32)^{-4/5} \)
4. (8 points) Simplify each of the following radical expressions.

(i) \( x^{\frac{3}{2}}x - 4\sqrt{x^4} \)

(ii) \( \left(\frac{\sqrt[3]{54x^4}}{\sqrt[3]{2x^{-2}}}\right) - 5x^2 \)

5. (12 points) Perform the indicated operations and simplify.

(i) \( (2 - y^5)(2 + y^5) \)

(ii) \( (x - 2)^3 \)

(iii) \( 3(x^5 - 4x^2 + 3x + 6) - 2(x^3 + 9x^2 - 3) \)
6. (16 points) Factor each of the following completely.

(i) \(7x^4 - 7\)

(ii) \(x^3 - 3x^2 + 4x - 12\)

(iii) \(x^3 - 27\)

(iv) \(10(x + 1)^{-1} - 2(x + 1)^{-2}\)

7. (4 points) Rationalize the denominator of \(\frac{4}{3\sqrt{2} - 4}\). (Show your Steps)
8. (12 points) Simplify each of the following rational expressions.

(i) \( \frac{4x^2 + 10}{x - 3} \div \frac{6x^2 + 15}{x^2 - 9} \)

(ii) \( \frac{x}{x - 1} \)

(iii) \( \frac{3x}{x^2 + 3x - 10} - \frac{2x}{x^2 + x - 6} \)

9. (4 points) Graph \( y = 8 + x^3 \). Determine the \( x \)-intercept and the \( y \)-intercept.
10. (12 points) Find the solution set of each equation.
   (i) \(2(x - 1) + 3 = x - 3(x + 1)\)

   (ii) \(2x - \frac{2x}{9} = \frac{x}{6} + \frac{1}{3}\)

   (iii) \(\frac{x}{x + 3} - \frac{x}{x - 3} = \frac{1}{x^2 - 9}\)
11. (12 points) Write each of the following in the standard form of a complex number. *(Show all your steps)*

(i) \[ \frac{\sqrt{-8}}{5 - i} \]

(ii) \((3\sqrt{-5})(-4\sqrt{-12})\)

(iii) \((3 + 5i)(-4 - 2i)\)