Simplify and/or evaluate the following:

1. For $x < 0$, \[ \frac{|x| - x}{-x} = \] ________________

2. \[ (-27)^{-\frac{2}{3}} = \] ________________

Simplify the following using only positive exponents.

3. \[ \left( \frac{4y^3x^{-2}}{3x^4} \right)^{-2} \left( \frac{x^{-3}}{2y^4} \right)^{-2} = \] ________________

4. \[ \left( \frac{a}{3b} \right)^{-1} - \frac{b}{a} \] ________________

Simplify the following expressing all answers in simplest radical form with rationalized denominators.

5. \[ \sqrt{\frac{24}{3x^5}} = \] ________________

6. \[ \sqrt[3]{-\frac{x^{15}}{9y^5}} = \] ________________

Simplify the following rational expression:

7. \[ \frac{4x^2 + 8x + 16}{x^3 - 8} = \] ________________

Perform the following operations and simplify the result:

8. \[ \frac{8x^2 + 10x - 3}{4x^2 - 9} \div \frac{8x^2 - 6x + 1}{8x^2 - 4x + 2} = \] ________________
Solve the following equations for all values which make them true.

9. \[ |2x + 6| - 3 = 7 \]

Solve and graph the solutions of the following inequalities. Each problem is worth 2 points.

10. \[ |2x + 6| \leq 10 \]

Express the following complex numbers in standard rectangular form, \( a + bi \).

11. \[ \frac{\sqrt{25} + \sqrt{-25}}{\sqrt{25} + \sqrt{-9}} = \text{______________} \]

12. How many grams of an alloy which is 16% tin by weight must be mixed with 500 g of an alloy which is 8% tin by weight to make a final alloy which is 12% tin by weight?