161 Test 1 Name: _____

1. Evaluate the following numbers and write your answer **without** exponents:

   (a) 10^{-5}

   (b) $\left(\frac{49}{64}\right)^{1/2}$

   (c) $8^{-2/3}$

   (d) $\frac{5^{-1}-3^{-1}}{2}$

2. Write in simplest radical form:

   (a) $\sqrt{50}$

   (b) $\sqrt{\frac{1}{3}}$

   (c) $\sqrt{8x^5y^6}$

   (d) $\frac{5}{2-\sqrt{3}}$

3. Write $\{x| -1 < x \leq 1\}$ in interval notation.

4. Write the interval $[2, \infty)$ in set notation.

5. Solve for x $|2x - 3| = 5$

6. Solve the inequality $|2x + 7| < 5$

7. Without doing any more work, solve $|2x + 7| \geq 5$

8. Factor the difference of two squares:

   (a) $4x^2 - 25$

   (b) $(x - 3)^2 - (x + 1)^2$

9. Factor the difference of two cubes:
   $x^3 - 1$

10. Factor the sum of two cubes:
$x^6 + 27$

11. Simplify the rational expression:
$$\frac{\frac{1}{x} - \frac{1}{3}}{x - 3}$$

12. Add: $\dfrac{1}{x+1} + \dfrac{1}{x-1}$

13. Subtract: $\dfrac{2}{x} - \dfrac{3}{x+1}$

14. Solve for x:

(a) $(x-4)^2 = 25$

(b) $x^2 + 6x - 2 = 0$

(c) $x^2 + x - 1 = 0$

(d) $2x^2 - 10x + 4 = 0$

15. Find the distance between the points $(2, 5), (8, 7)$ and find the midpoint.

16. Write the equation for the circle with center $(2, -4)$ and radius 9

17. Find the center and radius of the circle given by the equation $x^2 + y^2 + 4y = 12$