HW #3

Kerry Ojakian's MTH 28 Class
Due Date: Thursday May 1 (beginning of class)

General Instructions:

- Homework must be stapled, be relatively neat, and have your name on it. Put all work and answers on this paper.
- Use tutors, work with other students, but ... don't copy!

The Assignment

1. Simplify (express results with positive exponents only and rationalized denominators):

   (a) $1000^{-\frac{2}{3}}$

   (b) $\left(4x^3y^{-5}\right)^2$

---

2. Multiply and simplify. Write the answer using radicals.

   (a) $x^{-\frac{5}{6}} \cdot x^{-\frac{3}{8}}$

   (b) $x^{-\frac{1}{5}} \cdot x^{\frac{1}{5}}$

---

3. Simplify.

   (a) $\sqrt{\frac{5}{8}}$

   (b) $\frac{2\sqrt{20x^2y^3}}{\sqrt{3}}$

---

4. Multiply and simplify.

   (a) $\sqrt{6x^3y} \cdot \sqrt{2x^2y}$

   (b) $\sqrt[3]{25xy^2} \cdot \sqrt[3]{10x^5y}$

---

5. Perform the indicated operations and simplify.

   (a) $5\sqrt{8} + 3\sqrt{12} + \sqrt{50}$

   (b) $10\sqrt[3]{16} - 3\sqrt[3]{54}$

---

6. Perform the indicated operations and simplify:

   (a) $(\sqrt{2} + \sqrt{3})^2$

   (b) $\dfrac{6}{2 + \sqrt{5}}$

---

7. Simplify.

   (a) $(7 + \sqrt{3})(9 - \sqrt{3})$

   (b) $(7 + \sqrt[3]{6})(4 + 2\sqrt[3]{18})$

---

8. Solve.

   (a) $\sqrt{2x+4} - 4 = 0$

   (b) $\sqrt{2x+4} + 4 = 0$

---

9. Solve the equation.
   $\sqrt{2x+6} - x + 1 = 0$

---

10. Perform the operation and simplify.

    (a) $(2 - 4\mathbf{i}) \cdot (-3\mathbf{i})$

    (b) $(5 - 2\mathbf{i})(2 - 3\mathbf{i})$

---

11. Simplify.

    (a) $\dfrac{6}{9\mathbf{i}}$

    (b) $\dfrac{4}{1 - \mathbf{i}}$

---

12. Simplify each expression:

    (a) $-\mathbf{i} + 12 - \mathbf{i}^2 + 5\mathbf{i} - 3\mathbf{i}^4 + 4\mathbf{i}^3$

    (b) $(-2 + 9\mathbf{i}) - (11 - 5\mathbf{i})$

---

13. Solve (complex solutions are allowed):

    (a) $x^2 + 9x = -14$

    (b) $y^2 = 2y + 35$

---

14. Solve.
    $x^2 = 7x + 8$

---

15. Solve.
    $5x^2 + 21x + 4 = 0$

---

16. Solve (complex solutions allowed): $-2x + 1 = -2x^2$.
