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Name:

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Do not begin your test until instructed to do so. You will have 45 minutes to complete the test. The **only** items you are permitted to use are a pencil, eraser, and calculator. Any use of any other item will result in getting a 0 on the test. Keep your eyes on your own test. Getting answers in any form from others will result in getting a 0 on the test. Most of the credit is for showing your work (when appropriate), and the rest for the right answer. Enclose your answers (when appropriate). Talking while any test is out will result in a 10 point penalty.

Good luck! (Even though this is a matter of skill, not luck.)

Page	Points	Score
2	37	
3	35	
4	28	
Total:	100	

1. (6 points) Find the intersection and union of the sets  $\{-1, 2, 4, 7\}$  and  $\{2, 4, 6\}$ .
2. (6 points) Name the property illustrated by the equation  $28 + 1 = 1 + 28$  (be specific).
3. (6 points) Express the distance between 4 and 15 using absolute value. Then find the distance.
4. (6 points) Simplify  $\frac{14a^3b^5}{21a^7b^{-9}}$ .
5. (6 points) Write  $(3 \times 10^{60}) \cdot (8 \times 10^{40})$  in scientific notation.
6. (7 points) Rationalize the denominator of  $\frac{\sqrt{5}}{\sqrt{5} - 2}$

7. (7 points) Simplify  $\frac{10x^{2/3}}{2x^{1/4}}$ . Write your answer in radical notation.

8. (6 points) Distribute  $(2x - 5y)^2$ .

9. (8 points) Factor  $2x^3 - 4x^2 - 9x + 18$ .

10. (6 points) Factor  $x^2 - 9x + 20$ .

11. (8 points) Factor  $12x^2 - 16x - 3$ .

12. (8 points) Find the numbers which are not in the domain of  $\frac{x-5}{x^2-6x+5}$ .

13. (10 points) Simplify  $\frac{x^2-4}{x^3+8} \div \frac{2x-4}{x^2-2x+4}$ .

14. (10 points) Simplify  $\frac{\frac{1}{x^2-4} + \frac{1}{x-2}}{x+3}$ .

15. (5 points (bonus)) Fully factor  $-12(x+1)^{-1/2} + x(x+1)^{1/2}$ .