Solving Exponential Equations with Algebraic Exponents

Directions: Rewrite with common bases when needed, set exponents equal, and solve. Show all work. No calculators.

1. Solve $2^{x+3} = 128$.

2. Solve $2^{3x-1} = 32$.

3. Solve $3^{x-4} = \frac{1}{9}$.

4. Solve $5^{2x+1} = 3125$.

5. Solve $4^{x+2} = \frac{1}{16}$.

6. Solve $2^{x-5} = \frac{1}{8}$.

7. Solve $3^{2x+3} = \frac{1}{27}$.

8. Solve $10^{x-1} = 100$.

9. Solve $8^{5x-3} = 8^{x+5}$.

10. Solve $9^{6x-3} = 9^{x+2}$.

11. Solve $3^{4x+1} = 3^{x+7}$.

12. Solve $4^{8x-2} = 4^{x+5}$.