

YOU MUST SHOW YOUR WORK ON SEPARATE PAPER.

Solve each logarithmic equation. Check for extraneous solutions.

1. $\log_7(1 - 5x) = \log_7(x + 19)$

2. $\log_8 108 = \log_8 3x^2$

Solve each exponential equation without a calculator.

3. $32^{2x-3} = \left(\frac{1}{2}\right)^{x+4}$

4. $2^x + 3 = 67$

Solve each exponential equation with a calculator.

5. $3^x = 425$

6. $17^{-x} = 9$

7. $13 - 15^{0.4x} = -220$