

Aim: How do we solve exponential equations?**I. Do Now:**

1. Expand:

$$\log\left(\frac{y^5}{3x}\right)$$

2. Condense:

$$3\log x + 2\log y - 4\log z$$

3. Solve for x and check:

(a) $4^x = 32$

*(b) $4^x = 30$

II. There are two techniques for solving exponential equations (equations with variables in the exponents):

1.

2.

III. Practice: Solve and check:

4. $9^x = 27$

5. $4^x = \frac{1}{8}$

6. $5^x = 0.059$

7. $4^{x+5} = 7^x$

IV. Change of Base Formula:

$$\log_a b =$$

8. $\log_6 42 =$

9. $\log_5 15 =$

V. Application:

10. Carl deposits \$100 in a bank account at 6% interest, compounded annually. How many years will it take for his money to grow to \$150?

Recall: $A = P\left(1 + \frac{r}{n}\right)^{nt}$

where A = final amount (balance)

P = principal (money invested)

r = interest rate (6% = 0.06)

t = time, in years

n = # of times compounded per year

HW10

p. 217: 7, 11, 43, 101

p. 246: 97, 99

p. 207: 13, 15, 62, 64, 72