Name: _____ **Precalculus Unit 8, Lesson 3**

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

HW11
p. 277: 1ab, 5ab, 17, 18, 19, 33, 41
p. 267: 11, 13, 36, 38, 44