1. Solve the following equations:

   a. $2^x = 8^3$

   c. $4^{2n-1} = 64$

   b. $9^{2x-1} = 3^{6x}$

   d. $5^{5x} = 125^{x+2}$

*Numberphile Video

KeyConcept Compound Interest

You can calculate compound interest using the following formula.

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

where A is the amount in the account after t years, P is the principal amount invested, r is the annual interest rate, and n is the number of compounding periods each year.

2. An investment account pays 4.2% annual interest compounded monthly. If $2500 is invested in this account, what will be the balance after 15 years?

3. Find the account balance after 20 years if $100 is placed in an account that pays 1.2% interest compounded twice a month.

4. A certificate of deposit (CD) pays 2.25% annual interest compounded biweekly. If you deposit $500 into this CD, what will the balance be after 6 years?