Solve, YOU MUST SHOW YOUR WORK   Use one of the following as appropriate:

$$A(t) = a(1 \pm r)^t \qquad A = P\left(1 + \frac{r}{n}\right)^{nt}$$

14. A sample of bacteria grows at a rate of 3.2% per week. If the mad scientist begins with a very small sample of 150 mg, what will the sample size be at then end of 21 days?

15. Julianne bought a valuable baseball card was purchased at an auction for $175. The dealer promised it would appreciate in value at a rate of 5.5% per year. What is the value in 20 years?

16. Bob purchased baseball memorabilia at a cost of $250. However, after the professional athlete was named in the Mitchell report, the memorabilia depreciated in value at a rate of 15% per year. Bob kept the item in hopes the value would eventually go back up. Find the value after 4 years.

17. Sam invests $600 at $3\frac{1}{4}$ % compounded quarterly for 9 years. Find the amount Sam has at the end of the investment period.

18. A chemist has developed a new compound that he feels is eco-friendly. If it has a half-life of 3420 years, how much of a 30 gram sample will remain in the landfill after 8600 years?

Write each Transformed function:
20. the function f(x) = 2^x is translated 2 units to the right and 4 units up

21. the function f(x) = 2^x is translated 3 units to the left, 2 units down, vertically stretched by a factor of 4, and reflected across the x axis

List each Transformation occurring:

22. $3(2^{x-4}) + 1$ 23. $-\frac{1}{2}(2^{x+2}) - 3$ 23. $-\frac{3}{x-5} + 2$