1. Sketch the graph of the following difference equation: \( y_{n+1} = 2y_n - 5, \, y_0 = 6 \). You do not need to calculate specific values to plot on your graph.

2. Suppose that a savings account contains $3000 and earns 7.5% interest compounded quarterly. At the end of each quarter a $90 deposit is made into the account. Given that the difference equation is \( y_{n+1} = 1.01875y_n + 90 \), answer the following:
   (a) Compute \( y_1, y_2, \) and \( y_3 \) by using the difference equation.
   (b) Solve the difference equation.
   (c) Compute \( y_{28} \). Describe in words what \( y_{28} \) represents.

3. Solve the difference equation \( y_{n+1} = y_n + 6, \, y_0 = 3 \).

4. Write the equation of the line tangent to the graph of \( y = x^3 \) at the point (-3,-27).

5. Adam has just retired and has $500,000 in his retirement account. The account will earn interest at an annual rate of 6% interest compounded monthly. At the end of each month, Adam will withdraw a fixed amount to cover his living expenses. Adam wants his money to last exactly 30 years. (Note: \((1.005)^{360} \approx 6\))
   (a) How much money can he withdraw each month?
   (b) What is the maximum amount Adam can withdraw if he wants his savings to last indefinitely?

6. The rate at which a cricket chirps is determined by the temperature. If the temperature is \( x \) degrees Celsius, then the number of chirps per minute the cricket makes is given by \( y = 4x + 8 \) chirps per minute. Give an interpretation of the slope and the y-intercept of this line.
7. Evaluate each of the following limits:

(a) \( \lim_{x \to 5} 2x + 4 \)

(b) \( \lim_{x \to 3} \frac{x^2 - 9}{x - 3} \)

8. Use the limit definition to compute \( f'(2) \) where \( f(x) = 3x^2 + 2 \).