

TEST 1 REVIEW SHEET

- (1) Find a recursive formula and the 12th element for each of the following sequences.
 - (a) $1, -3, -7, -11, -15, \dots$
 - (b) $4, 40, 400, 4000, \dots$
- (2) Write a recursive formula for an arithmetic sequence whose first term is 5 and whose common difference is 7. Write a recursive formula for a geometric sequence whose first term is 10 and whose common ratio is -3 .
- (3) The enrollment at a college is currently 5678. The board of administrators estimates that each year from now on, the school will graduate 24% of its students and admit 1250 new students. What will the enrollment be during the 6th year? What will the enrollment be in the long run?
- (4) Consider the three following graphs, state if they are increasing or decreasing and whether they represent the graph of an arithmetic, geometric, or shifted geometric sequence.

- (5) Biff has a \$3000 loan at 12% annual interest compounded monthly. His monthly payments are \$500. How long will it take biff to pay off the loan and how much will he have paid in total?
- (6) Biff deposits \$30000 in an account earning 5% annual interest. He deposits a fixed amount in the account every month. How much must he deposit every month so that he has a total of \$150000 after 30 years?
- (7) Consider the arithmetic sequence $u_0 = 10$ and $u_n = u_{n-1} - 7$. find an explicit formula for u_n . What is the slope of the line passing through the points in the sequence?
- (8) Find the slope of:
 - (a) $y = 4 + 6x$
 - (b) $3y + 7x = 2$
 - (c) $3.5y - 2.6x = 7$
 - (d) $y + 2(x - 3) = x$.
 - (e) $2(y - 2) + 5(x - 1) = x + y$.
- (9) Find the equation of the line passing through the points $(3, 7)$ and $(4, 2)$.

(10) Identify the slopes of the following lines as positive, negative, 0, or undefined.

(11) A 500 Gallon barrel of water is leaking at a rate of 2.5 gallons per hour. Identify the dependent and independent variables in this situation and write a linear equation describing the situation. How much water is in the barrel after 9 hours. How long until the barrel is empty?

(12) Biff enterprizes manufactures widgets. The have the following data for number of widgets produced and total profit: 100 widgets \$120, 150 widgets \$182, 200 widgets 208, 250 widgets \$235. Find a linear model for this data and use it to estimate Biff's profits if he manufactures 110 widgets or 375 widgets.

(13) Biff leaves Provo Utah in a car traveling 75mph headed due East. Ziff is 30 miles East of Provo headed due East at 64mph. How long will it take Biff to overtake Ziff?

(14) Solve: the systems:

(a)

$$y = 3x + 2, y = 3.5x - 2$$

(b)

$$y + x = 5, 2y - 3x = 7$$

(c)

$$2(x - 2) + 3(y + x) = 3, 1.5x - y = 5$$