MATH 020 Support 5 Applications of Linear Equations

Slope-Intercept Form	Point-Slope Form	Slope Formula
$y = mx + b$	$y - y_1 = m(x - x_1)$	$m = \dfrac{y_2 - y_1}{x_2 - x_1}$

Problems

1. A car rental agency charges $275 per week plus $0.40 per mile to rent a car.

    a) Write an equation that expresses the weekly cost to rent the car, y, in terms of the number of miles driven during the week, x.

    b) How many miles did you drive during the week if the weekly cost to rent the car was $325?

2. A plant can manufacture 50 golf clubs per day at a total daily cost of $5145 and 75 golf clubs per day for a total cost of $6895.

    a) Assuming that daily cost and production are linearly related, find the total daily cost, C, of producing x golf clubs.

    b) Graph the total daily cost for $0 \le x \le 200$.

    c) Interpret the slope and y intercept of the cost equation.

3. The manager of a restaurant found that the cost to produce 200 cups of coffee is $167, while the cost to produce 400 cups is $317. Assume the relationship between the cost y to produce x cups of coffee is linear.

    a) Write a linear equation that expresses the cost, y, in terms of the number of cups of coffee, x.

    b) How many cups of coffee are produced if the cost of production is $414.50?

4. A farmer buys a new tractor for $153,000 and assumes that it will have a trade-in value of $88,000 after 10 years. The farmer uses a constant rate of depreciation to determine the annual value of the tractor.

    a) Find a linear model for the depreciated value V of the tractor t years after it was purchased.

    b) What is the depreciated value of the tractor after 6 years?

    c) When will the depreciated value fall below $40,000?

    d) Graph V for $0 \leq t \leq 20$.