

Math 141 Key Topics: 1.1-1.4

Sections 1.1-1.2

- Plotting points (x, y) and graphing lines on a set of axes.
- Finding x and y intercepts.
- Slope of a line: $m = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$
- Two lines are parallel if their slopes are equal (or both slopes are undefined).
- Two lines are perpendicular if their slopes are negative reciprocals of each other: $m_1 = -\frac{1}{m_2}$
- Equations of lines
 - Point-Slope Form: $y - y_1 = m(x - x_1)$
 - Slope-Intercept Form: $y = mx + b$ (where b is y -intercept.)
 - Vertical line through (a, b) is $x = a$.
 - Horizontal line through (a, b) is $y = b$.

Section 1.3

- Linear Depreciation: Book value, V , as a function of time, t .
- Linear Cost, Revenue, and Profit Functions
 - Total Cost Function:

$$C(x) = cx + F$$

where c is the production cost per unit, F is fixed costs, and x is the number of units produced.
 - Revenue Function:

$$R(x) = sx$$

where s is the selling price per unit and x is the number of units sold.
 - Profit Function:

$$P(x) = R(x) - C(x)$$
- Linear Demand and Supply Equations
 - Demand Equation: Unit price, p , as a function of quantity demanded, x . Demand curves have negative slope.
 - Supply Equation: Unit price, p , as a function of quantity supplied, x . Supply curves have positive slope.

Section 1.4

- Finding points of intersection.
- Break-Even Point: where Cost and Revenue functions intersect. (where $C(x) = R(x)$, ie $P(x) = 0$.)
 - Break-even quantity
 - Break-even revenue
- Market Equilibrium: where Supply and Demand curves intersect. (where Supply=Demand)
 - Equilibrium quantity
 - Equilibrium price