

More Background Algebra preparation for Applications of Differential Equations:

Direct Variation

Write an equation for each description and find the constant of proportionality

- (a) y is proportional to x and passes through the point (3, 45)

- (b) y is proportional to the product of the square of x and the cube root of z and $y=36$ when $x=3$ and $z= -8$.

- (c) y is proportional to the cube of x and inversely proportional to the square root of z and $y=3/2$ when $x=2$ and 25.

Exponential Functions

- (a) Write equation of exponential function with horizontal asymptote at $y=0$ passing through the points (0, 375) & (5, 280).

- (b) Write equation of exponential function with horizontal asymptote at $y=75$ passing through the points (0, 375) & (5, 280).

Writing Differential Equations... Without solving the D.E. state the type of solution equation for each

- (a) The population (P) is changing at a rate proportional to the current population.

- (b) A baked yam is removed from a 400 °F oven to cool on the counter of a kitchen where the temperature is 68 °F. The yam cools at a rate proportional to the difference in temperature between the yam and the surrounding air.

- (c) The rate of change of a population is proportional to the product of the current population and the difference between 500 and the current population.