More Differential Equations Practice

1997 AB6 (calculator)

Let *v(t)* be the velocity, in feet per second, of a skydiver at time *t* seconds,  After her parachute opens, her velocity satisfies the differential equation  with the initial condition 

a) Use separation of variables to find an expression for *v* in terms of *t*, where *t* is measured in seconds.

b) Terminal velocity is defined at  Find the terminal velocity of the skydiver to the nearest foot per second.

c) It is safe to land when her speed is 20 feet per second. At what time *t* does she reach this speed?

1993 AB6 (calculator)

Let *P(t)* represent the number of wolves in a population at time *t* years where  the population *P(t)* is increasing at a rate directly proportional to  where the constant of proportionality is *k*.

a) If  find *P(t)* in terms of *t* and *k*.

b) If  find *k.*

c) Find 