

Week 6
MATH 34A
TA: Jerry Luo

Office Hours: Wednesdays 1:30-2:30PM, South Hall 6431X

31. A plane flies at 200 mph for the first and last half hour of a flight. It flies at 400 mph the rest of the time. The route is 1000 miles long. The town of Erewhon is on the route 300 miles before the end. What is the distance of the plane from Erewhon after t hours of flying?

(a) $t \leq \frac{1}{2}$

(b) $\frac{1}{2} \leq t \leq 2$

(c) $2 \leq t \leq 2\frac{1}{2}$

(d) $2\frac{1}{2} \leq t \leq 3$

33. The population of a country is growing exponentially. The population in millions was 90 in 1970 and 120 in 1980.
- (a) What is the population t years after 1970?
 - (b) How long does it take the population to double?
 - (c) When will the population be 400 million?

37. A building has a hemispherical roof. The roof is to be painted with a layer of paint one millimeter thick. The radius of the hemisphere is 90 meters. [1 liter = 1000cm^3 . 1 meter is 100 cm or 1000 mm. The surface area of sphere is $4 * \pi * R^2$] How many liters of paint are needed?

40. The number of items sold at a price of x dollars per item is $2000 - 300x$. It costs 4 dollars to make the item.

What price should be charged to make the most profit?