**Chapter 4 TEST**

**Graphing Calculator Section**

1. At 1:00 pm, ship A is 25km due north of ship B.  
   If ship A is sailing west at a rate of 16 km/h and ship B is sailing south at 20 km/h, find the rate at which the distance between the two ships is changing at 1:30 pm. [3]

1. A box is to be made from a rectangular sheet of cardboard 70 cm by 150 cm by cutting equal squares out of the four corners and bending up the resulting 4 flaps to make the sides of the box. The box has no top. What is the largest possible volume of the box? [3]

**Chapter 4 TEST   
NO Calculator Section**

1. a) Explain why the MVT applies to on , and what it states. [2]  
     
     
     
     
     
     
     
     
     
     
     
   b) Find any points in the open interval where the tangent line to is parallel to the chord line joining and . [1]
2. Determine whether the given function has any local or absolute extreme values, and find those values if possible.  
     
   a) [2]  
     
     
     
     
     
     
     
     
     
     
     
     
     
     
   b) [2]  
     
     
     
     
     
     
     
     
     
     
     
     
     
     
     
     
   c) [2]
3. Evaluate the following limits: [2]  
     
   a)   
     
     
     
     
     
     
     
     
   b)
4. The volume of a right circular cylinder is increasing at a rate of 2 cm3/min. When the volume of the cylinder is 60 cm3, the radius is 5cm and is increasing at 1cm/min. How fast is the height of the cylinder changing at that time? [3]
5. Let [3]  
     
   a) Is 0 a critical point of *f*?  
     
     
     
     
     
   b) Does *f* have an inflection point at 0?  
     
     
     
     
     
     
     
   c) Is ?
6. Determine the intervals of constant concavity of and locate any inflection points. [3]

1. Use a suitable linearization to approximate . [2]