**Chapter 2 TEST**

**Graphing Calculators not allowed**

1. Consider the following graph of a function *f* :



a) Determine the equations of all of its asymptotes. [1]

b) What is the domain of *f*? [1]

c) Where is the function discontinuous on its domain? [1]

d) Determine the following limits and values if they exist: [4]

 i) v)

 ii) vi)

 iii) vii)

 iv) viii)
2. A particle is moving along the *x*-axis so that at a time *t* (in seconds), it is at a position [3]
(in metres).
a) Find its average velocity in the first 3 seconds.

b) Find its instantaneous velocity at time .

c) In which direction is it moving at time ?

d) On which side of the origin is it at time ?
3. Let . [4]

a) Determine its slope at .

b) Determine its slope at .

c) Determine the equation of the tangent line at .

d) Determine the equation of the normal line at .
4. Use the IVT to prove that the equation is solvable. [2]
5. Determine the following limits [16]

a)

b)

c)

d)

e)

f)

g)

h)

i)

j)

k)

l)

m)

n) Let be the greatest integer function.

p)

q)

1. For each function, determine *k* such that it is continuous on its domain. [3]
a)

b)
2. TRUE or FALSE? [3]
If TRUE, no explanation is needed.
If FALSE, give a counterexample (expression or graph)
a) If exists, but does not exist, then does not exist.

b) If neither nor exists, then does not exist.

c) If *f* is continuous at *a*, then so is

d) If is continuous at *a*, then so is *f*.