13 February 2003

Name	Student Number	

## Show all work. Label your answers clearly.

1. Let  $h(x) = \frac{x^3 - x^2 - 2x}{3x^3 + 6x^2 - 9x}$  Find the zeros and the horizontal and vertical asymptotes of h(x).

2. A sprinkler is set to water a circular region of radius 12 feet. The sprinkler head turns through an angle of 120 degrees in 30 seconds.

a) What is the area of grass watered after 30 seconds?

b) DeAndrea is running along the perimeter of the watered region, keeping pace with the sprinkler, that is, keeping her feet in the stream of water. What is DeAndrea's angular velocity and linear velocity?