

Please show **all** your work! Answers without supporting work will not be given credit.

**Clearly mention what theorem(s), if any, you are using.**

Write answers in space provided. Use the backside if needed.

You have 14 minutes to complete this Quiz.

You can get MAXIMUM  $(6 + 4) + 5 = 15$  marks.

Name:

1. Describe the domain of the following function using inequalities [6] and draw a rough sketch of the region [4].

$$f(x, y) = \frac{\sqrt{(y-x)(y-3x)}}{\arcsin(x^2 + y^2)}$$

2. Show that the following limit does not exist [5].

$$\lim_{(x,y) \rightarrow (0,0)} \frac{x^2 y^3}{x^4 + y^6}$$