

Mathematics, Bonus Question

December 3, 2012

Consider the function:

$$f(x) = \frac{x}{1+x^2}, -3 \leq x \leq 3. \quad (1)$$

Please do the following:

1. Find the stationary points of $f(x)$.
2. Are the points maximum or minimum? Check using the second derivative test.
3. find:

$$\int f(x) dx \quad (2)$$

4. Evaluate:

$$\int_1^2 f(x) dx \quad (3)$$

5. Sketch the graph of $f(x)$.
6. Shade the area evaluated on your sketch.