Name: _____

Signature: _____

Show all work clearly and in order, and box your final answers. Justify your answers whenever possible. You have 20 minutes to take this 10 point quiz.

1. Given

$$\int_0^5 \frac{4x}{\sqrt{x^4+1}}\,\mathrm{d}x,$$

and the following graph of this area.

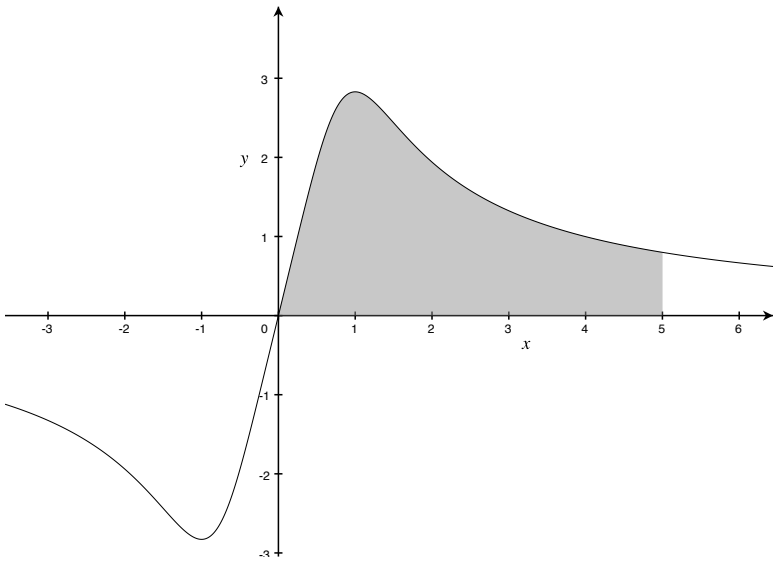

Figure 1: Area of interest.

Find the following.

(a) [9 points] Evaluate (exact answer) the integral by initially using a simple u-substitution[1] followed by a trigonometric substitution.[2]

(b) [1 point] For this integral, Mathematica returns $2\sinh^{-1} 25$. Is your answer equivalent?[3]

[1] $u = x^2$
[2] $u = \tan\theta$
[3] You may use a calculator.