MATH 141 (Section 5 & 6)
Prof. Meade

Quiz 12
November 21, 2013

University of South Carolina
Fall 2013

Name: Key
Section: 005 / 006 (circle one)

1. (5 points) Find the derivative of $h(x) = \int_2^{1/x} \arctan(t)\ dt$.

$$h'(x) = \arctan(1/x) \cdot \frac{d}{dx}(1/x)$$
$$= \arctan(1/x) \cdot \frac{-1}{x^2}$$
$$= -\frac{\arctan(1/x)}{x^2}$$

2. (5 points) Evaluate $\int_1^4 (2v+5)(3v-1)\ dv$.

$$= \int_1^4 6v^2 + 13v - 5\ dv$$
$$= \left(2v^3 + \frac{13}{2}v^2 - 5v\right)\Big|_1^4$$
$$= \left(2\cdot 4^3 + \frac{13}{2}\cdot 4^2 - 5\cdot 4\right) - \left(2\cdot 1^3 + \frac{13}{2}\cdot 1^2 - 5\cdot 1\right)$$
$$= \left(128 + 104 - 20\right) - \left(2 + \frac{13}{2} - 5\right)$$
$$= 212 - \frac{7}{2}$$
$$= \frac{417}{2}$$