

Calculus Worksheet Quiz

1. Integrate $\int (2x \cdot \arctan x) dx$ (**u substitution**)

2. Use the limit definition of a definite integral to evaluate $\int_0^2 (5x + 3) dx$ (**Riemann Sum**)

3. A cylindrical can is to hold $25\pi m^3$. The material for the top and bottom costs $\$5/m^2$ and material for the side costs $\$4/m^2$. Find the radius r and height h of the most economical can.
(**Applied maxima & minima**)

4. Integrate $\int \frac{x^2 + x - 1}{x(x^2 - 1)} dx$ (**Partial fractions**)

5. Integrate $\int \sqrt{1 + \sqrt{5 + \sqrt{x}}} dx$ (**Power substitutions**)

6. Differentiate: (**Chain Rule**)

i. $y = e^{6x^2+5x-8}$

ii. $y = 5 \sin^2(x^3)$