

Problem 1

1. Compute $\int x^n dx$. Treat the cases $n = -1$, $n \neq -1$ separately.
2. Compute $\int_{-3}^3 e^{-x^2} \sin(x) dx$. (Think about this in terms of the area definition of an integral)

Problem 2

A stone is dropped 450 metres above the ground. Note that acceleration due to gravity in normal person units is approximately 10 metres per second.

1. How long does it take the stone to reach the ground?
2. With what velocity does it strike the ground ?