

7.5 Applications from Science and Stats

Work done by a constant force: $W = F \cdot d$

Work done by a variable force: $W = \int_a^b F(x)dx$

Jan 25-11:04 PM

A leaky bucket weighs 22N empty. It is lifted from the ground at a constant rate to a point 20m above the ground by a rope weighing 0.4 N/m. The bucket starts with 70N of water but it leaks at a constant rate and just finishes draining as the bucket reaches the top. Find the amount of work done.

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How much work does it take to pump all the water over the rim of a cylindrical tank of height 10ft and diameter 10ft?

Jan 25-11:09 PM

A conical tank of height and diameter 10 ft is filled to within 2 ft of the top with olive oil weighing 57 lb per cubic foot. How much work does it take to pump the oil to the rim of the tank?

Jan 25-11:10 PM