Answer on Question #84637 – Math – Calculus

Question

A crane in a construction site lifts a box of materials from a location with coordinates (2,4, 6) to a new location with coordinates (2, 4, 28). Suppose a constant force F=3k kN is applied throughout the process and the unit for length is meter. Find the work done by the force onto the box.

Solution

Distance from the point (2,4,6) to the point (2,4,28):

$$d = \sqrt{(2-2)^2 + (4-4)^2 + (28-6)^2} = 22\ m.$$

Work is

$$W = Fd = 3000 * 22 = 66000\ kN * m.$$