MA 126 — Fall 2016 — Prof. Clontz — Quiz

Name: _____

Choose D for "None of these"

16. What is the work required to push a heavy box 3 meters over an irregular surface, assuming it requires $F(x) = 3 + 2x - x^2$ newtons of force to move at x meters?

    A. $\frac{5}{3}$ joules

    B. 9 joules

    C. $\frac{13}{3}$ joules

17. Which of these integrals gives the work in ft-lbs required to pull up a hanging 30-pound 15-foot chain?

    A. $\int_0^{15}(30 - 2x)\,dx$

    B. $\int_0^{15x} 30\,dy$

    C. $\int_{15}^{30}(15 + x)\,dx$

18. Which of these integrals gives the work in kN-m required to pump out all salt-water to the top of a cubical tank with side length 4 meters, if it is initially **half-full**? Assume the density of salt water is 10 kilonewtons per cubic meter.

    A. $10\pi \int_0^4(16 + 8x + x^2)\,dx$

    B. $\int_0^{16}(4 - x)^3\,dx$

    C. $160 \int_0^2(4 - x)\,dx$