

Work!

1. A spring has a natural length of 2 ft, and a force of 15 lb is required to hold it compressed at a length of 18 in. How much work is done in stretching this spring from its natural length to a length of 3 ft?
2. A tank in the shape of a hemisphere of radius 60 is resting on its flat base with the curved surface on top. It is filled with alcohol of density 40 lb per cubic foot. How much work is done in pumping all the alcohol to the level of the top of the tank?
3. A 20 lb monkey is attached to the bottom of a 50 ft chain that weighs 0.5 lb per linear foot. The other end of the chain is attached to the 40 ft high ceiling of the monkey's enclosure. Find the amount of work the monkey does in climbing up her chain to the ceiling.