**Practice Problems**

1. A part of the function *f* (*x*) = 4 – 0.25(*x* – 4)2 is approximated by a straight segment on the interval [0, 2]. Is there a point between 0 and 2 for which a line tangent to the function is parallel to the segment?

2. A solid homogenous sphere of 4 kg mass and radius 0.1 m rolls down a 2-meter-long incline. The angle of the incline to the horizontal is 30o. The initial velocity of the sphere is zero at the top of the incline. Calculate:

A. The static friction coefficient for this system

B. The friction force between the incline and the sphere

C. The final velocity of the sphere at the end of the incline