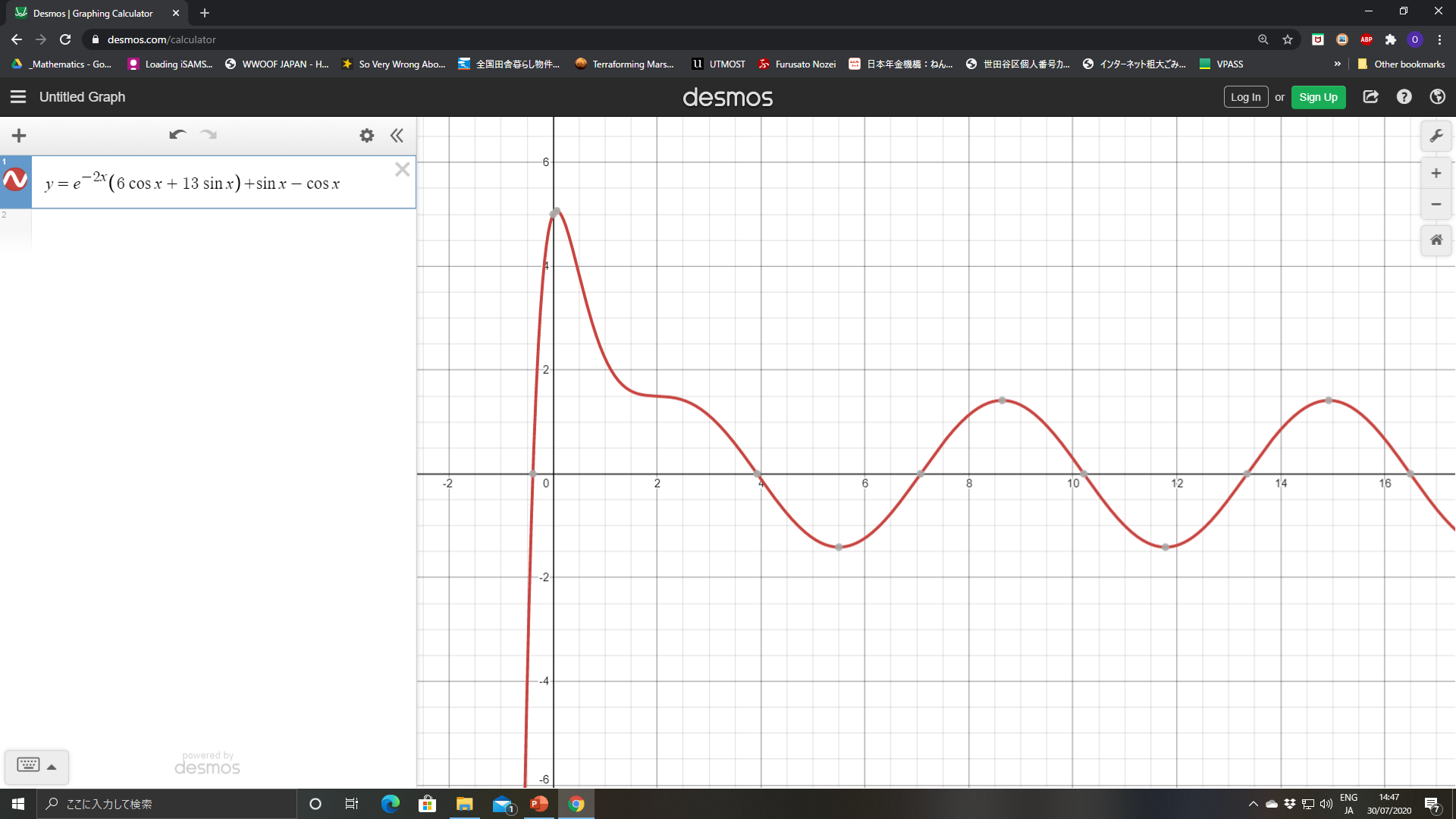
**8C Part 2 Forced Harmonic Motion**

1. A particle of mass 1.5kg is moving along the x-axis. At time the displacement of from the origin is metres and the speed of is . Three forces act on , namely a restoring force of , a resistance to motion of of magnitude and a force of magnitude acting in the direction . When , and .
2. Show that
3. Find as a function of
4. Describe the motion when is large



1. A particle is attached to end of a light elastic string . Initially the particle and the string lie at rest on a smooth horizontal plane. At time , the end of the string is set into motion and moves with constant speed in the direction , and the extension in the string is . Air resistance acting on is proportional to its speed. The subsequent motion can be modelled by the differential equation:

Find an expression for in terms of , and .