Advanced Dynamics
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Module No # 06
Lecture No # 30
Planar Kinetics: Work – Energy Relations – II

We will continue with work energy relation for planar kinetics of rigid bodies.

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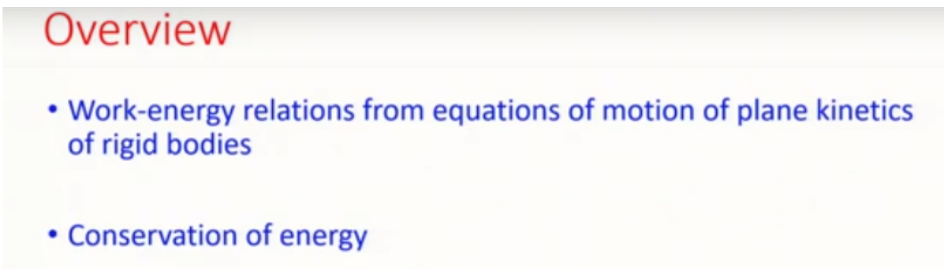

Here we are going to look at applications of the work energy relations through some problems.

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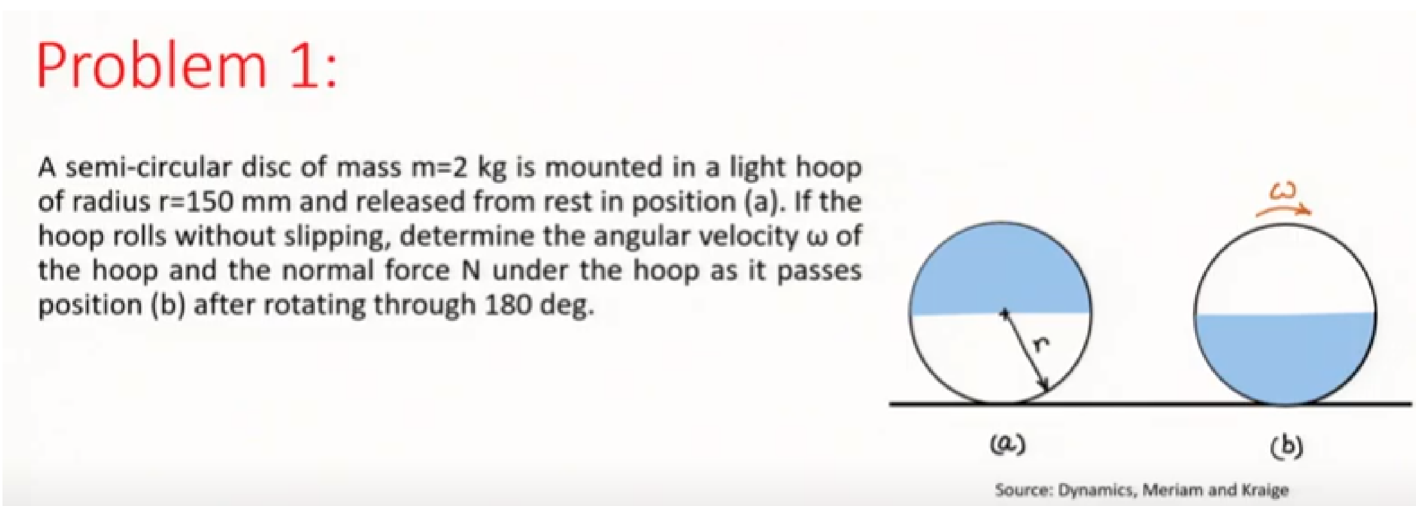

The statement of the problem is shown in the slide above.

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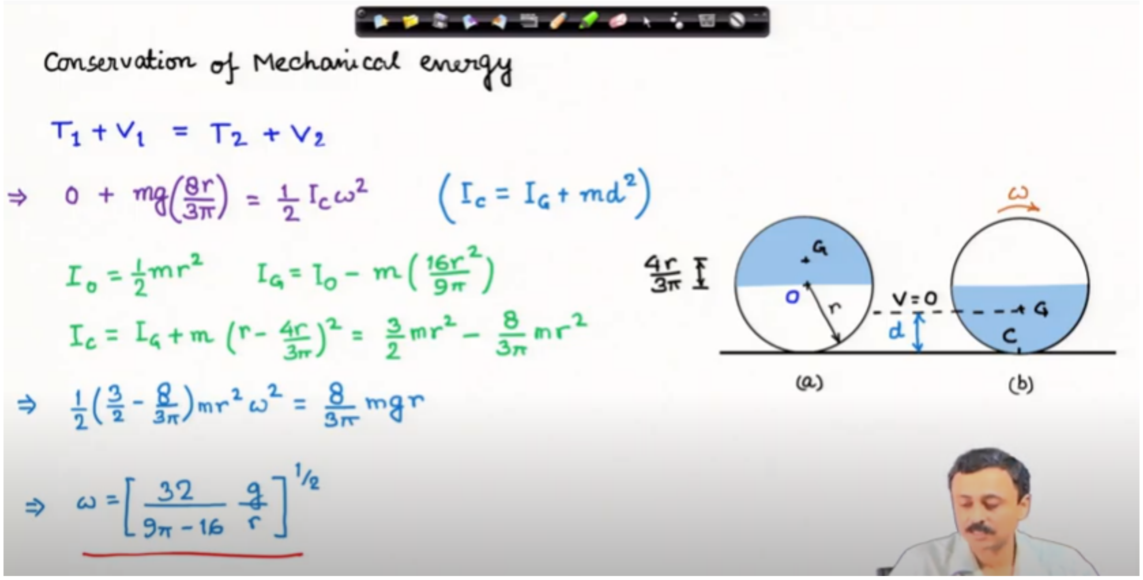

First, we determine the angular velocity in state (b) as shown in the above slide.

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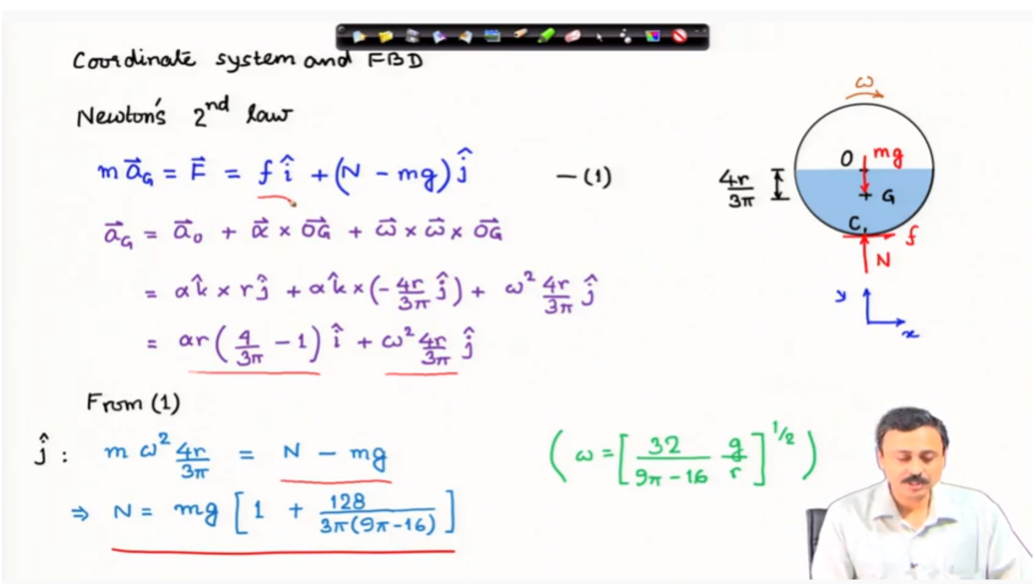

The detailed steps for determination of the normal reaction at C is presented in the above slide.

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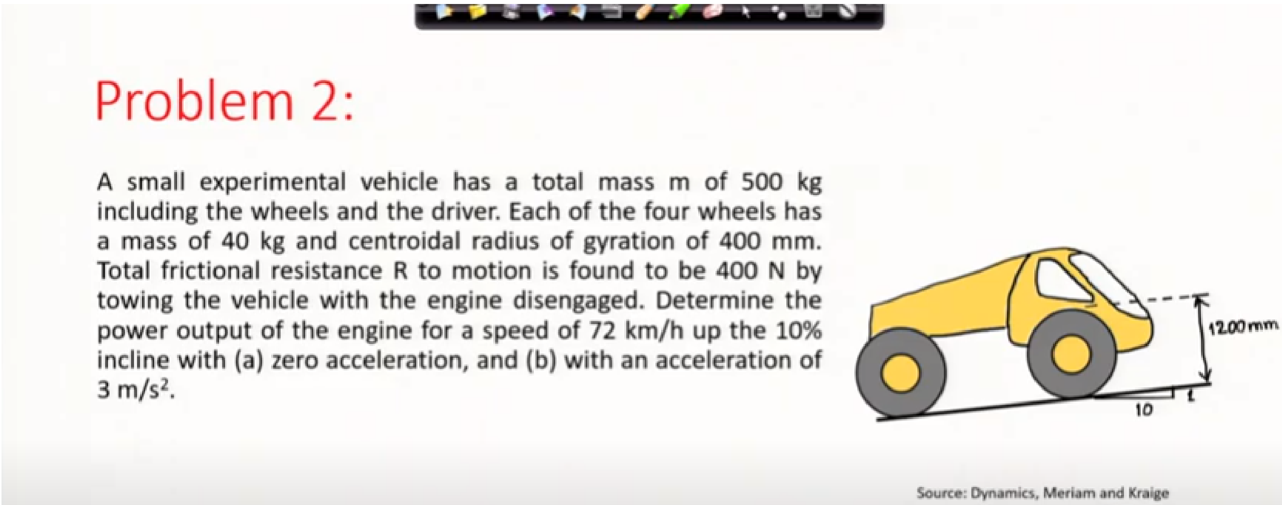

The next problem statement is presented in the above slide.

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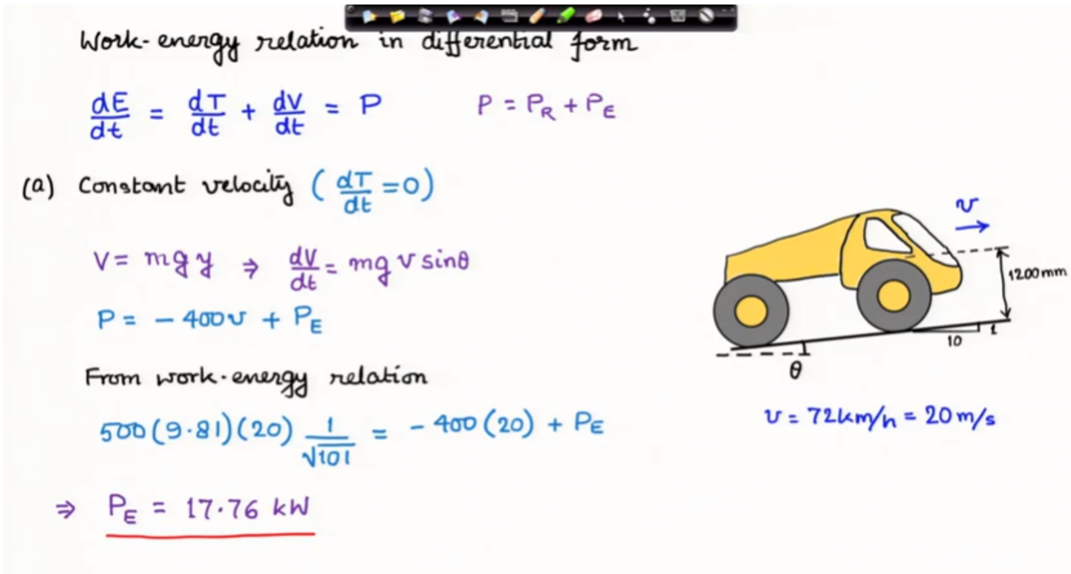

For the constant velocity case, the calculation of engine power is presented in the slide above.

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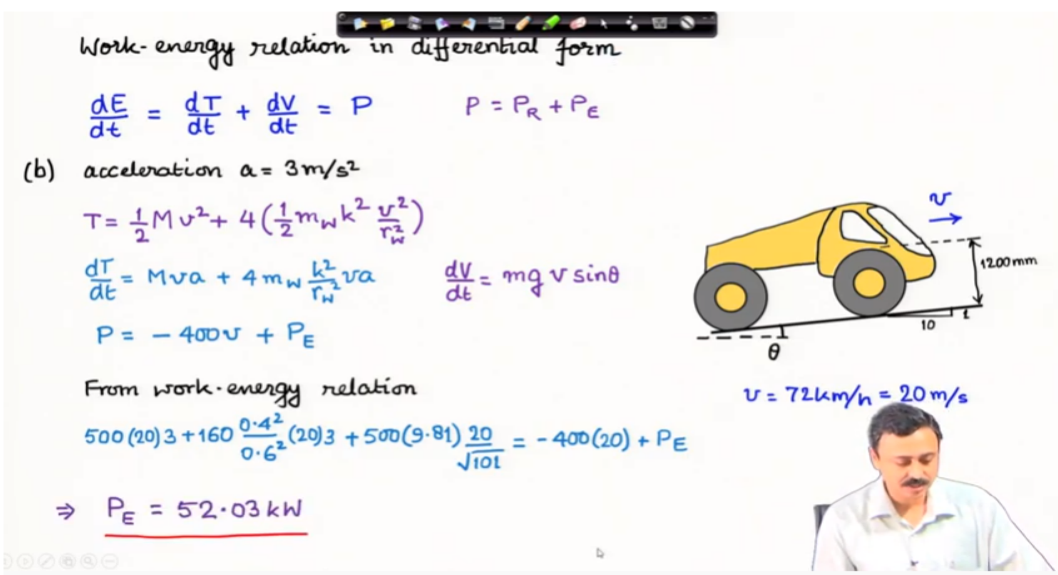

The solution of part (b) of the problem with accelerated motion, the calculation of engine power is shown above.

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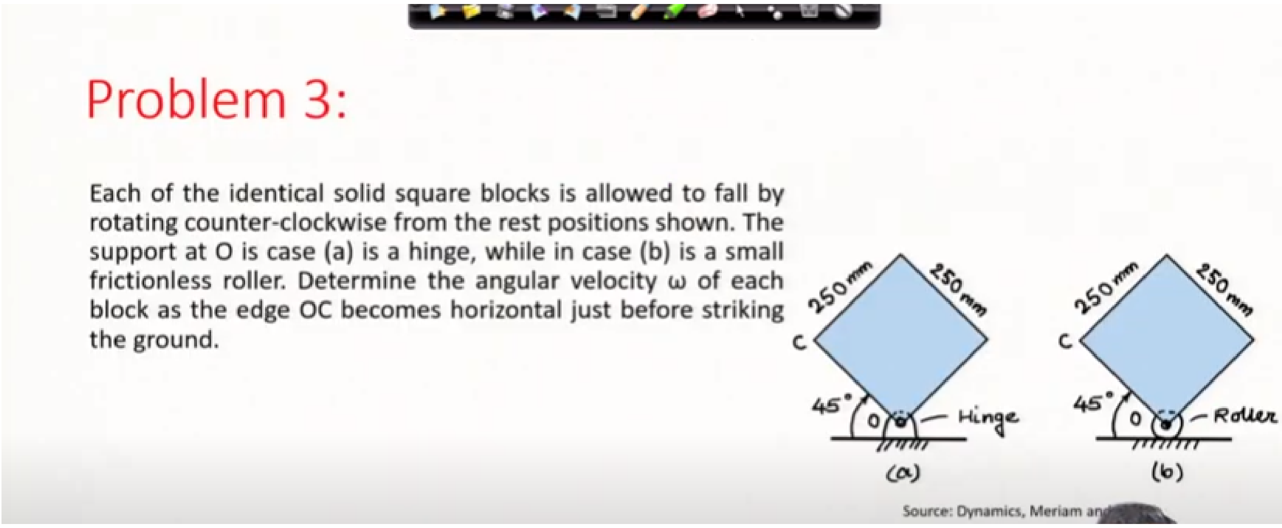

It may be noted in this problem that case (a) represents a fixed axis rotation of the block, while case (b) corresponds to a general planar motion of the block.

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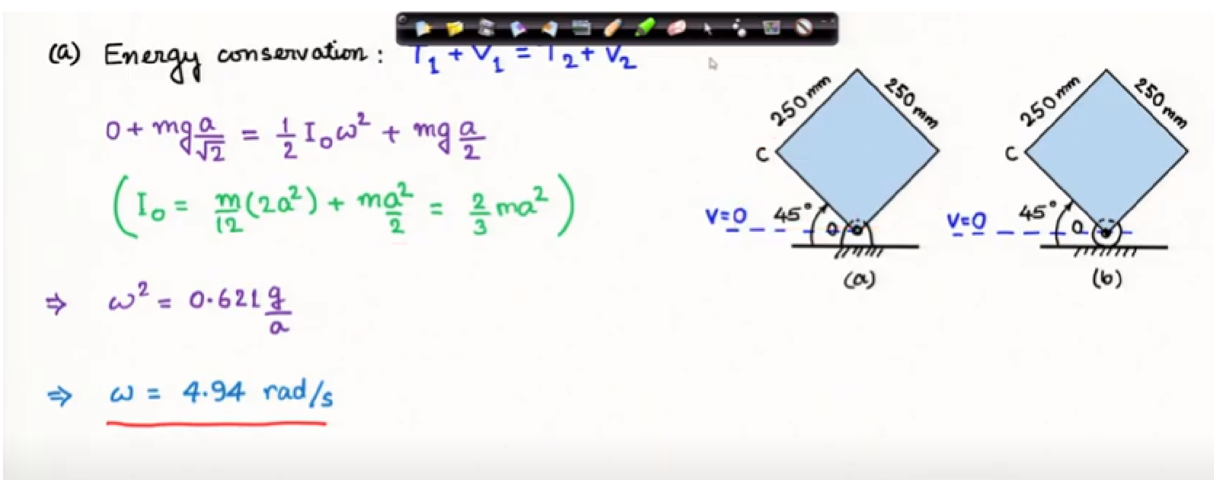

The above slide presents the solution for case (a).

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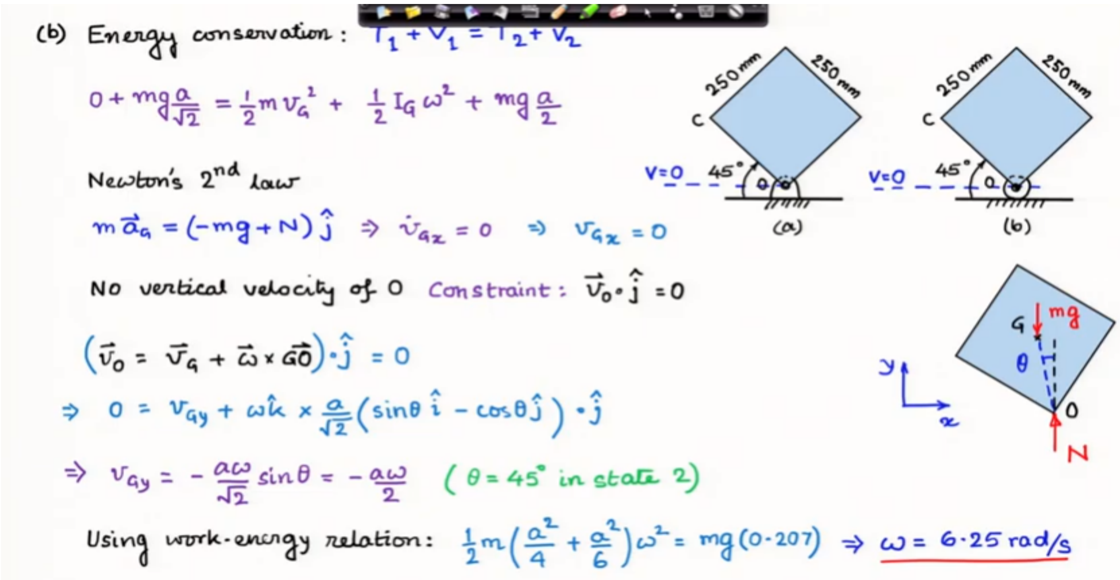

The solution for case (b) is a little involved since an additional constraint on the motion of G needs to be determined. This has been shown in the slide above.

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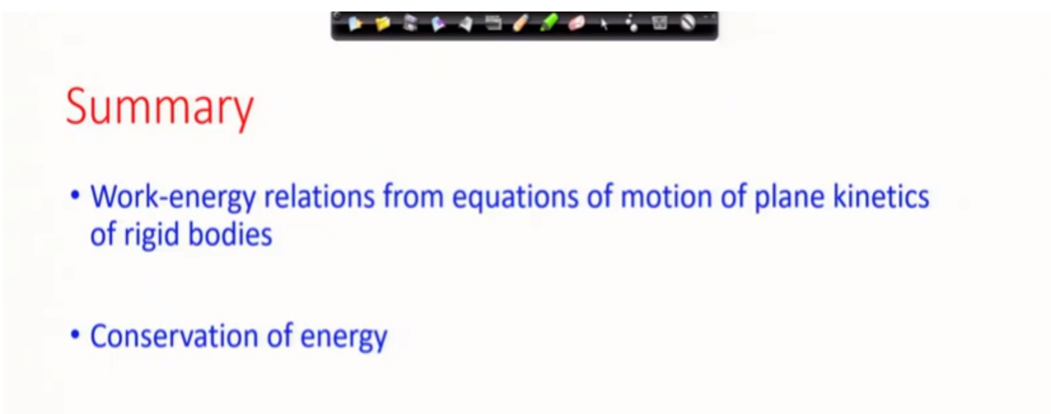

The discussions are summarized in the above slide.