CIRCULAR MOTION PROBLEMS
brief answers

Brief solutions to the problems are available in the Brief Solutions document.
Step-by-step solutions to each problem are available in the Step-by-Step Solutions document, and in the YouTube videos.
The problems are available in the Problems document.
You can find links to these resources at my website:
www.freelance-teacher.com
Links to the documents are also in the video description boxes for the YouTube videos.

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Video (1)
The speed of the mass is 1.2 m/s.

Video (2)
(a) The minimum linear velocity required to prevent the person from slipping downward is 8.4 m/s.
(b), (c) The minimum angular velocity required to prevent the person from slipping downward is 1.7 rad/s, or 16 rpm.

Video (3)
$v_t = \sqrt{v_b^2 + 2gR}$

Video (5)
(a) Mass m_1 has speed $\sqrt{\frac{m_2 gR}{m_1}}$
(b) The time period is $\frac{2\pi R}{\sqrt{\frac{m_2 gR}{m_1}}}$. If you like, you can simplify this result to $2\pi\sqrt{\frac{m_1 R}{m_2 g}}$.