Honors Physics Rotation HW, kinematics (Homework)

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1.
A rotating body has a constant angular speed of 33 rev/min.
(a) What is its angular speed in rad/s?
(b) Through what angle, in radians, does it rotate in 1.4 s?

2.
A potter's wheel moves from rest to an angular speed of 0.18 rev/s in 32 s. Find its angular acceleration in radians per second per second.

3.
A machine part rotates at an angular speed of 0.31 rad/s; its speed is then increased to 1.6 rad/s at an angular acceleration of 0.69 rad/s^2. Find the angle through which the part rotates before reaching this final speed.

4.
An electric motor rotating a workshop grinding wheel at a rate of 111 rev/min is switched off. Assume constant negative angular acceleration of magnitude 2.00 rad/s^2.
(a) How long does it take for the grinding wheel to stop?
(b) Through how many radians has the wheel turned during the interval found in (a)?

5.
A rotating wheel requires 9.00 s to rotate 25.0 revolutions. Its angular velocity at the end of the 9.00 s interval is 98.0 rad/s. What is the constant angular acceleration of the wheel?

6.
A coin with a diameter of 2.00 cm is dropped onto a horizontal surface. The coin starts out with an initial angular speed of 14.7 rad/s and rolls in a straight line without slipping. If the rotation slows with an angular acceleration of magnitude 2.25 rad/s^2, how far does the coin roll before coming to rest?