2. The coefficient of static friction between a certain cylinder and a horizontal floor is 0.40. If the rotational inertia of the cylinder about its symmetry axis is given by $I = (1/2)MR^2$, then the maximum acceleration the cylinder can have without sliding is:
A) $0.1g$ B) $0.2g$ C) $0.4g$ D) $0.8g$ E) $1.0g$

同物理作業練習題，命中率 100%

7. The coefficient of static friction between a certain cylinder and a horizontal floor is 0.40. If the rotational inertia of the cylinder about its symmetry axis is given by $I = (1/2)MR^2$, then the maximum acceleration the cylinder can have without sliding is:
(A) 0.1 g (B) 0.2 g (C) 0.4 g (D) 0.8 g (E) 1.0 g

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3. A large water tank, open at the top, has a small hole in the bottom. When the water level is 30 m above the bottom of the tank, the speed of the water leaking from the hole:
A) is 2.5 m/s B) is 24 m/s C) is 44 m/s D) cannot be calculated unless the area of the hole is given
E) cannot be calculated unless the areas of the hole and tank are given

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5. The water level in a reservoir is maintained at a constant level. What is the exit velocity in an outlet pipe 3.0 m below the water surface?
(A) 2.4 m/s (B) 3.0 m/s (C) 5.4 m/s (D) 7.7 m/s (E) 49 m/s

5. A large tank is filled with the water to a height of h. The bottom of the tank has a hole. What is the speed of the water emerged out of the hole?
(A) $\sqrt{2gh}$ (B) $\sqrt{3gh}$ (C) $\sqrt{4gh}$ (D) $\sqrt{5gh}$ (E) $\sqrt{6gh}$

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5. One mole of an ideal gas expands reversibly and isothermally at temperature T until its volume is doubled. The change of entropy of this gas for this process is:
A) $R\cdot \ln 2$ B) $(\ln 2)/T$ C) 0 D) $RT\cdot \ln 2$ E) $2R$

同物理作業練習題，命中率 100%

4. One mole of an ideal gas expands slowly and isothermally at temperature T until its volume is doubled. The change of entropy of this gas for this process is:
(A) Rln2 (B) ln2/T (C) 0
(D) RTln2 (E) 2R

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6. Positive charge Q is distributed uniformly throughout an insulating sphere (not a shell) of radius R, centered at the origin. A particle with a positive charge Q is placed at $x = 2R$ on the x axis. The magnitude of the electric field at $x = R/2$ on the x axis is:
A) $Q/72\pi\varepsilon_0 R^2$ B) $Q/8\pi\varepsilon_0 R^2$ C) $7Q/18\pi\varepsilon_0 R^2$ D) $11Q/18\pi\varepsilon_0 R^2$ E) none of these

7. Positive charge Q is distributed uniformly throughout an insulating sphere of radius R, centered at the origin. A particle with positive charge Q is placed at x = 2R on the x axis. The magnitude of the electric field at x = R / 2 on the x axis is:
(A) $Q/4\pi\varepsilon_0 R^2$ (B) $Q/8\pi\varepsilon_0 R^2$ (C) $Q/72\pi\varepsilon_0 R^2$
(D) $17Q/72\pi\varepsilon_0 R^2$ (E) none of these
