A particle moves in a circle in such a way that the x- and y-coordinates of its motion are given in meters as functions of time t in seconds by:

$$x = 5\cos(3t)$$
$$y = 5\sin(3t)$$

26. What is the period of revolution of the particle?

(A) $\frac{1}{3}$ s

(B) 3 s

(C) $\frac{2\pi}{3}$ s

(D) $\frac{3\pi}{2}$ s

(E) 6π s

27. Which of the following is true of the speed of the particle?

(A) It is always equal to 5 m/s.
(B) It is always equal to 15 m/s.
(C) It oscillates between 0 and 5 m/s.
(D) It oscillates between 0 and 15 m/s.
(E) It oscillates between 5 and 15 m/s.

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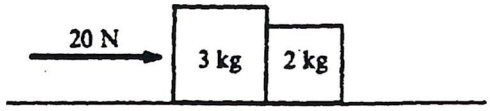
28. The radius of the Earth is approximately 6,000 kilometers. The acceleration of an astronaut in a perfectly circular orbit 300 kilometers above the Earth would be most nearly

(A) 0 m/s^2
(B) 0.05 m/s^2
(C) 5 m/s^2
(D) 9 m/s^2
(E) 11 m/s^2



29. Two blocks are pushed along a horizontal frictionless surface by a force of 20 newtons to the right, as shown above. The force that the 2-kilogram block exerts on the 3-kilogram block is

(A) 8 newtons to the left
(B) 8 newtons to the right
(C) 10 newtons to the left
(D) 12 newtons to the right
(E) 20 newtons to the left

30. When a mass m is hung on a certain ideal spring, the spring stretches a distance d. If the mass is then set oscillating on the spring, the period of oscillation is proportional to

(A) $\sqrt{\frac{d}{g}}$

(B) $\sqrt{\frac{g}{d}}$

(C) $\sqrt{\frac{d}{mg}}$

(D) $\sqrt{\frac{m^2g}{d}}$

(E) $\sqrt{\frac{m}{g}}$