

1. A force  $F = (3\mathbf{i} + 4\mathbf{j} + 5\mathbf{k})$  Newtons is applied on a 500 g object to move it a displacement  $D = (5\mathbf{i} + 4\mathbf{j} + 3\mathbf{k})$  meters, find the angle between the force  $F$  and the displacement  $D$ , if the work done by  $F$  is 46J? \*

(3 Points)

46 deg

23 deg

69 deg

zero

None of the answers

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2. What happens to the kinetic energy of a moving object if the net work done is positive? \*  
(3 Points)

- The kinetic energy remains the same
- The kinetic energy is zero
- The kinetic energy increases
- The kinetic energy becomes negative
- The kinetic energy decreases

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3. If the position of a particle is given by  $x(t) = 4t^3 - 12t^2$ , where  $x$  is in meters and  $t$  is in seconds, find the displacement when the particle's acceleration is zero? \*

(3 Points)

+10 m

-10 m

-16 m

+16 m

None of the answers

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4. A motorbike engine can develop a power of 80 kW in order to keep a constant velocity of 72 km/h. What is the magnitude of the pushing force? \*  
(3 Points)

None of the answers

4 N

20 N

20 kN

4 kN

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5. A 200-gram mass ( $m_1$ ) and 50-gram mass ( $m_2$ ) are connected by a string. The string is stretched over a frictionless pulley. Determine the acceleration magnitude of the masses and the magnitude of the tension in the string; neglecting the mass of the string? \*  
(3 Points)

$a=5 \text{ m/s}^2$  and  $T = 0.8 \text{ N}$

$a=5 \text{ m/s}^2$  and  $T = 1.2 \text{ N}$

None of the answers

$a=6 \text{ m/s}^2$  and  $T = 1.2 \text{ N}$

$a=6 \text{ m/s}^2$  and  $T = 0.8 \text{ N}$

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6. A body moving with uniform acceleration has a velocity of 12 cm/s when its x coordinate is 3 cm. If its x coordinate 2 s later is -5 cm, what is the magnitude of its acceleration? \*

(3 Points)

- 8 m/s<sup>2</sup>

- 8 cm/s<sup>2</sup>

+ 8 m/s<sup>2</sup>

+ 8 cm/s<sup>2</sup>

None of the answers

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7. A container with a mass of 6 kg is lifted to a height of 8 m. How much work is done by the gravitational force? \*

(3 Points)

480 J

zero

- 480 J

48 J

None of the answers

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9. A 3500 kg truck traveling at 25m/s suddenly brakes and skids to a halt. If the coefficient of kinetic friction between the tires and the road is 0.4, how far does the truck skid before stopping? \*  
(3 Points)

87 km

87 m

78 m

78 km

None of the answers

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10. Newton' first law of motion is also known as \*  
(3 Points)

- conservation law of force
- action-reaction law
- force concept law
- None of the answers
- static law

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11. A 5 kg ball is lifted 12 m above the ground. It's potential energy is \*  
(3 Points)

0.06 kJ

0.60 kJ

-0.60 kJ

0.60 kW

None of the answers

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