Physics 2305 31 January, 2000
Quiz 3—Form A

1. Dennis uses a cord to accelerate a 1.50 kg bag upward at a rate of 1.20 m/s^2. What is the tension in the cord?

A) 0 N
B) 12.9 N
C) 14.7 N
D) 16.5 N

2. Jody holds a key vertically from a thin chain while she accelerates her car. If the acceleration is 6.2 m/s^2, what angle does the chain make from the vertical?

A) 32°
B) 39°
C) 51°
D) 58°

Useful constants and equations:

$\Sigma \mathbf{F} = m \mathbf{a}$ $F_g = m g$
$a_r = v^2/r$ $g = 9.8$ m/s^2

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Quiz 3—Form B

1. A 2.0 kg block rests on a plane inclined 35° from the horizontal. What force (parallel to the plane) is required to hold the block in place?

A) 11 N
B) 14 N
C) 16 N
D) 20 N

2. Eduardo is spinning a 2.0 kg brick in a horizontal circle of radius 1.0 m at a speed of 2.0 m/s. The acceleration of the brick is:

A) 2.0 m/s^2
B) 4.0 m/s^2
C) 8.0 m/s^2
D) 16 m/s^2

Useful constants and equations:

$\Sigma \mathbf{F} = m \mathbf{a}$ $F_g = m g$
$a_r = v^2/r$ $g = 9.8$ m/s^2

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Quiz 3—Form C

1. A block of mass m slides down a frictionless incline tilted an angle θ from the horizontal from rest. Its acceleration is:

A) $g \sin\theta$
B) $g \cos\theta$
C) $g \tan\theta$
D) $m\ g$

2. What is the angle between the vectors $\mathbf{p} = 1.0\ \mathbf{i} - 2.0\ \mathbf{j}$ and $\mathbf{s} = 2.0\ \mathbf{i} + 1.5\ \mathbf{k}$?

A) 37°
B) 69°
C) 80°
D) 90°

Useful constants and equations:

$\Sigma\ \mathbf{F} = m\ \mathbf{a}$ $\qquad$ $F_g = m\ g$

$a_r = v^2 / r$ $\qquad$ $g = 9.8\ \text{m/s}^2$

$\mathbf{a} \cdot \mathbf{b} = a\ b \cos\theta = a_x\ b_x + a_y\ b_y + a_z\ b_z$