

Instructor(s): *J. Ipsier*PHYSICS DEPARTMENT
Exam 1

February 4, 2008

Name (print, last first): _____

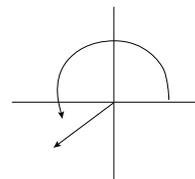
Signature: _____

*On my honor, I have neither given nor received unauthorized aid on this examination.***YOUR TEST NUMBER IS THE 5-DIGIT NUMBER AT THE TOP OF EACH PAGE.**

- (1) **Code your test number on your answer sheet (use lines 76–80 on the answer sheet for the 5-digit number).** Code your name on your answer sheet. **DARKEN CIRCLES COMPLETELY.** Code your UFID number on your answer sheet.
- (2) Print your name on this sheet and sign it also.
- (3) Do all scratch work anywhere on this exam that you like. **Circle your answers on the test form.** At the end of the test, this exam printout is to be turned in. No credit will be given without both answer sheet and printout.
- (4) **Blacken the circle of your intended answer completely, using a #2 pencil or blue or black ink.** Do not make any stray marks or some answers may be counted as incorrect.
- (5) The answers are rounded off. Choose the closest to exact. There is no penalty for guessing. If you believe that no listed answer is correct, **leave the form blank.**
- (6) **Hand in the answer sheet separately.**

$$g = 9.80 \text{ m/s}^2$$

1. A trip consists of 2 legs. All angles are measured counterclockwise with respect to the positive x axis as shown. Leg 2 is a displacement of magnitude 10 m at 120° . The net displacement has magnitude 5 m and its angle is 30° . What is the magnitude of the initial leg 1?



- (1) 11 m (2) 5 m (3) 25 m (4) 2 m (5) 18 m
2. An auto is initially backing up at a speed of 5 m/s. At time $t = 0$ the auto begins accelerating in the forward direction at 4 m/s^2 . What is its net displacement after 4 s of acceleration? (In other words, if $x_I = 0$, what is the value of X_F at $t = 4 \text{ s}$?)
- (1) 12 m (2) 9 m (3) 6 m (4) 3 m (5) 0
3. An auto accelerates from rest in the positive x direction at a rate of 4 m/s^2 for 10 s. It then brakes at a constant rate until it comes to rest. The auto travels a total distance of 500 m. What is the magnitude of its acceleration in m/s^2 while it is braking?
- (1) 2.7 (2) 4.7 (3) 6.5 (4) 8.9 (5) 12.1
4. A police cruiser is traveling at 20 m/s. An auto traveling in the same direction at 30 m/s passes the cruiser. At this moment the auto begins to accelerate in the forward direction at a rate of 2 m/s^2 , and the cruiser begins to accelerate in the forward direction at 4 m/s^2 . How far does the cruiser travel until it catches up to the auto?
- (1) 400 m (2) 300 m (3) 200 m (4) 100 m (5) 500 m
5. A ball is thrown straight up from the ground. After 5 s, the ball is at a height of 30 m. What is the y component of the ball's final velocity in m/s? The positive y direction is up.
- (1) -18.5 (2) $+12.3$ (3) $+5.2$ (4) -36.2 (5) $+22.4$
6. Ball A is thrown straight up from the ground with speed v^* and reaches height h . Ball B is thrown straight up from the ground and reaches height $16h$. What is the initial speed of ball B in terms of v^* ?
- (1) $4v^*$ (2) $2v^*$ (3) $6v^*$ (4) $8v^*$ (5) $16v^*$

