

Name \_\_\_\_\_

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

Given that the  $x$ - and  $y$ -coordinates of a moving particle are given by the indicated parametric equations, find the magnitude and direction of the acceleration for the specific value of  $t$ .

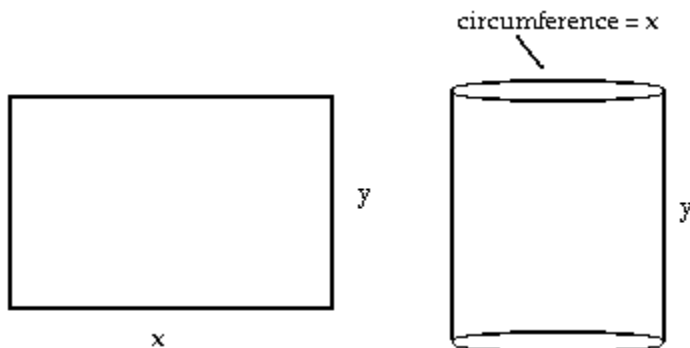
- 1)  $x = t + \frac{-2}{t}$ ,  $y = t - \frac{-2}{t}$ ,  $t = 7$  1) \_\_\_\_\_  
 A) 0.01;  $135^\circ$       B) 0.02;  $135^\circ$       C) 0.01;  $315^\circ$       D) 0.02;  $315^\circ$

Given that the  $x$ - and  $y$ -coordinates of a moving particle are given by the indicated parametric equations, find the magnitude and direction of the velocity for the specific value of  $t$ .

- 2)  $x = 8t^2 + 6t + 2$ ,  $y = -6t^2 - 5t - 6$ ,  $t = 8$  2) \_\_\_\_\_  
 A) 167.80,  $323^\circ$       B) 167.80,  $143^\circ$       C) 152.20,  $323^\circ$       D) 152.20,  $143^\circ$

**Solve the problem.**

- 3) A man flies a kite at a height of 120 m. The wind carries the kite horizontally away from him at a rate of 7 m/sec. How fast is the distance between the man and the kite changing when the kite is 130 m away from him? 3) \_\_\_\_\_  
 A) 3.2 m/sec      B) 2.7 m/sec      C) 7 m/sec      D) 120.2 m/sec
- 4) A spherical balloon is inflated with helium at a rate of  $80\pi \text{ ft}^3/\text{min}$ . How fast is the balloon's radius increasing when the radius is 4 ft? 4) \_\_\_\_\_  
 A) 3.75 ft/min      B) 2.50 ft/min      C) 1.25 ft/min      D) 0.31 ft/min
- 5) A rectangular sheet of perimeter 24 cm and dimensions  $x$  cm by  $y$  cm is to be rolled into a cylinder as shown in part (a) of the figure. What values of  $x$  and  $y$  give the largest volume? 5) \_\_\_\_\_



- A)  $x = 8$  cm;  $y = 4$  cm      B)  $x = 9$  cm;  $y = 3$  cm  
 C)  $x = 10$  cm;  $y = 2$  cm      D)  $x = 7$  cm;  $y = 5$  cm

- 6) Find the number of units that must be produced and sold in order to yield the maximum profit, given the following equations for revenue and cost: 6) \_\_\_\_\_
- $R(x) = 4x$   
 $C(x) = 0.01x^2 + 0.8x + 90.$
- A) 160 units                      B) 320 units                      C) 240 units                      D) 480 units

**Find the equation of the normal line to the indicated curve at the given point.**

- 7)  $x^2 - y^2 = 17$  at  $(9, 8)$  7) \_\_\_\_\_
- A)  $8x - 9y - 144 = 0$                       B)  $8x + 9y - 144 = 0$   
C)  $8x + 9y + 144 = 0$                       D)  $8x - 9y + 144 = 0$

## Answer Key

Testname: MTH 232 EXAM 2 201040 MU

- 1) D
- 2) A
- 3) B
- 4) C
- 5) A
- 6) A
- 7) B