University of Calgary
Faculty of Science
Department of Mathematics and Statistics

Math 249 L05

Fall 2005

Worksheet 2(Answers)

1. Determine the equation of a straight line in each case:

   a. The straight line passes through the point A(2,1) and has a slope of -2.
   Answer:

   The straight line has equation $y - 1 = -2(x - 2)$.

   b. The straight line contains the points A(3,-4) and B(-1,2).
   Answer:

   The straight line has equation $y + 4 = -\frac{3}{2}(x - 3)$

   c. The straight line has y-intercept = 5 and x-intercept = -3.
   Answer:

   The straight line has equation $y = \frac{5}{3}x + 5$

   d. The straight line is parallel to the straight line 3x - 4y = 12 and passes through the point (-2,-3).
   Answer:

   The straight line has equation $y + 3 = \frac{3}{4}(x + 2)$

   e. The straight line is perpendicular to the straight line 4x + 5y = -20 and passes through the mid-point of the line segment AB where A is has coordinates (-1,1) and B has coordinates (5,-2).
   Answer:

   The straight line has equation $y + \frac{1}{2} = \frac{5}{4}(x - 2)$

2. Determine the equation of the circle which has diameter AB where A and B are the points given in 1(e).
   Answer:

   The circle has equation $(x - 2)^2 + \left(y + \frac{1}{2}\right)^2 = 45$

University of Calgary
Faculty of Science
Department of Mathematics and Statistics

2.2

Math 249 LOS

Fall 2005

Worksheet 2(Answers)

3. Determine the equation of the circle which has centre at (-2,1) and which passes through the point (2,4).
Answer:

The circle has equation $(x + 2)^2 + (y - 1)^2 = 25$

4. Determine the equation of the circle whose centre is at the point of intersection of the lines $2x - 3y = 7$ and $3x + 5y = 1$, and which has a radius of 4 units.
Answer:

The circle has equation $(x - 2)^2 + (y + 1)^2 = 16$

5. Determine the equation of the circle which is tangent to the x-axis and which has centre at the point (3,-1).
Answer:

The circle has equation $(x - 3)^2 + (y + 1)^2 = 1$

6. Determine the equation of the circle which is tangent to the y-axis and which has centre at the point (4,-2).
Answer:

The circle has equation $(x - 4)^2 + (y + 2)^2 = 16$