MAC 1105 Review for Exam 1
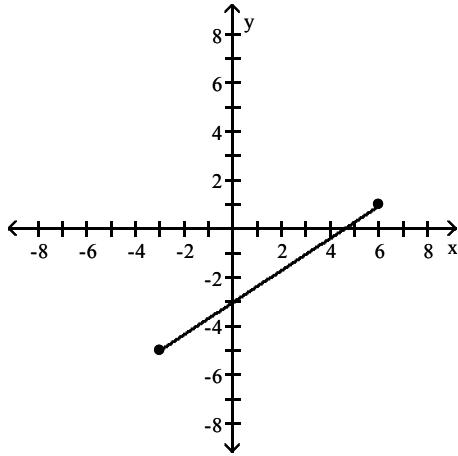
Name_____

Find the distance between the endpoints of the line segment.

1)

1) _____

Find the length of each side of the triangle determined by the three points P_1, P_2, and P_3. Verify that the triangle is a right triangle, and find its area,

2) $P_1 = (-5, -4)$, $P_2 = (-3, 4)$, $P_3 = (0, 1)$

2) _____

Solve the problem.

3) Find all the points having an x–coordinate of 9 whose distance from the point $(3, -2)$ is 10.

3) _____

Find the midpoint of the line segment joining the points P_1 and P_2.
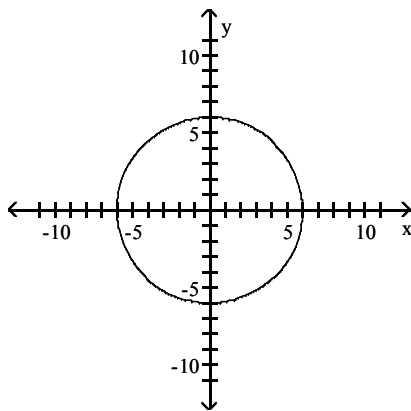
4) $P_1 = (7, 1)$; $P_2 = (-16, -16)$

4) _____

Solve the problem.

5) If $(2, -4)$ is the endpoint of a line segment, and $(5, -3)$ is its midpoint, find the other endpoint.

5) _____

List the intercepts of the graph.

6)

6) _____

1

Solve the equation by the Square Root Method.

7) $(x + 4)^2 = 49$

7) _____

8) $(x + 3)^2 = 10$

8) _____

Solve the equation by completing the square.

9) $x^2 + 4x - 3 = 0$

9) _____

Find the real solutions, if any, of the equation. Use the quadratic formula.

10) $3x^2 + 10x + 2 = 0$

10) _____

Use the discriminant to determine whether the quadratic equation has two unequal real solutions, a repeated real solution, or no real solution without solving the equation.

11) $x^2 - 5x + 4 = 0$

    A) repeated real solution
    B) two unequal real solutions
    C) no real solution

11) _____

12) $x^2 - 4x + 4 = 0$

    A) repeated real solution
    B) two unequal real solutions
    C) no real solution

12) _____

13) $x^2 + 3x + 5 = 0$

    A) repeated real solution
    B) two unequal real solutions
    C) no real solution

13) _____

Without solving, determine the character of the solutions of the equation in the complex number system.

14) $x^2 - 3x + 3 = 0$

    A) a repeated real solution
    B) two unequal real solutions
    C) two complex solutions that are conjugates of each other

14) _____

Write the expression in the standard form a + bi.

15) $(4 + 7i) - (-5 + i)$

15) _____

16) $2i(6 - 9i)$

16) _____

17) $(4 + 4i)(3 - 7i)$

17) _____

18) $\dfrac{9}{2 - 7i}$

18) _____

19) $\dfrac{7 + 9i}{4 - 3i}$

19) _____

20) $2i^{15} - i^7$

20) _____

21) i^{19}

21) _____

Perform the indicated operations and express your answer in the form a + bi.

22) $\sqrt{(4 + 3i)(3i - 4)}$

22) _____

Solve the equation in the complex number system.

23) $x^2 + 12x + 72 = 0$

23) _____

Find the real solutions of the equation.

24) $\sqrt[3]{4x + 2} = -4$

24) _____

25) $(2x + 5)^{1/2} = 2$

25) _____

26) $x^4 - 10x^2 + 9 = 0$

26) _____

27) $x + \sqrt{x} = 6$

27) _____

Solve the equation.

28) $|3x + 9| = 7$

28) _____

29) $|x| = -5$

29) _____

30) $3|2x - 8| - 11 = 7$

30) _____

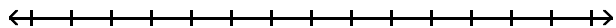**Solve the inequality. Express your answer using interval notation. Graph the solution set.**
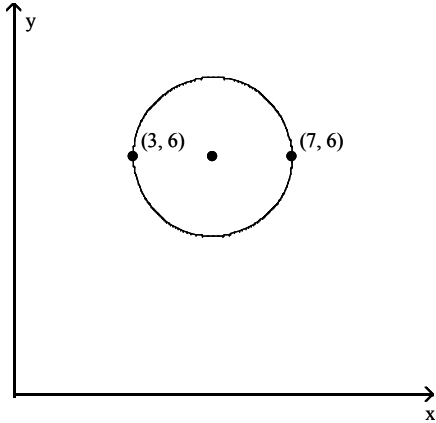
31) $|x - 6| - 7 \geq 1$

31) _____
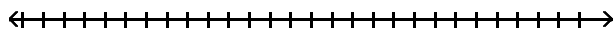
32) $|8k + 7| + 1 < 5$

32) _____
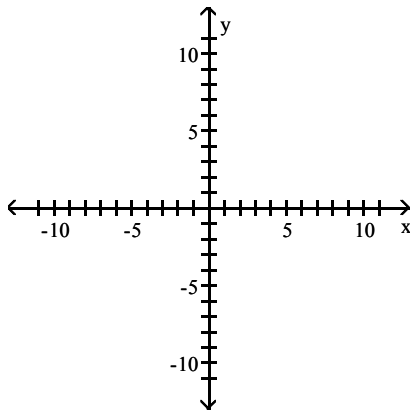
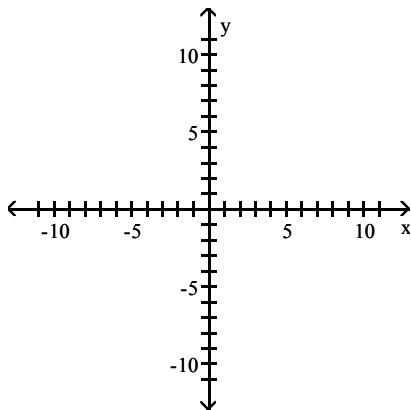**Write the standard form of the equation of the circle.**

33)

33) _____

Graph the equation.

34) $x^2 + y^2 = 9$

34) _____

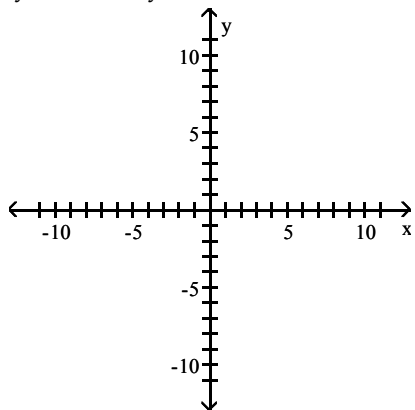35) $x^2 + (y - 3)^2 = 36$

35) _____

Solve the problem.

36) Find the equation of a circle in standard form where C(6, –2) and D(–4, –4) are endpoints of a diameter.

36) _____

4

Find the center (h, k) and radius r of the circle. Graph the circle.

37) $x^2 + y^2 - 10x - 2y + 17 = 0$

37) _____

Find the standard form, then the general form of the equation of the the circle.

38) Center at the point (-4, -3); containing the point (-3, 3)

38) _____

1) $3\sqrt{13}$

2) $d(P_1, P_2) = 2\sqrt{17}$; $d(P_2, P_3) = 3\sqrt{2}$; $d(P_1, P_3) = 5\sqrt{2}$

   right triangle

3) (9, 6), (9, –10)

4) $\left(-\dfrac{9}{2}, -\dfrac{15}{2}\right)$

5) (8, –2)

6) (–6, 0), (0, –6), (0, 6), (6, 0)

7) {–11, 3}

8) $\{-3 + \sqrt{10}, -3 - \sqrt{10}\}$

9) $\{-2 - \sqrt{7}, -2 + \sqrt{7}\}$

10) $\left\{\dfrac{-5 - \sqrt{19}}{3}, \dfrac{-5 + \sqrt{19}}{3}\right\}$

11) B

12) A

13) C

14) C

15) 9 + 6i

16) 18+ 12i

17) 40 – 16i

18) $\dfrac{18}{53} + \dfrac{63}{53}i$

19) $\dfrac{1}{25} + \dfrac{57}{25}i$

20) –i

21) –i

22) 5i

23) {–6 + 6i, –6 – 6i}

24) $\left\{-\dfrac{33}{2}\right\}$
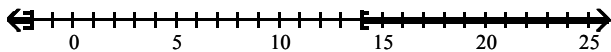
25) $\left\{-\dfrac{1}{2}\right\}$

26) {–1, 1, –3, 3}

27) {4}
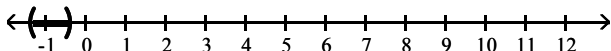
28) $\left\{-\dfrac{2}{3}, -\dfrac{16}{3}\right\}$

29) no real solution

30) {1, 7}

31) $(-\infty, -2] \cup [14, \infty)$
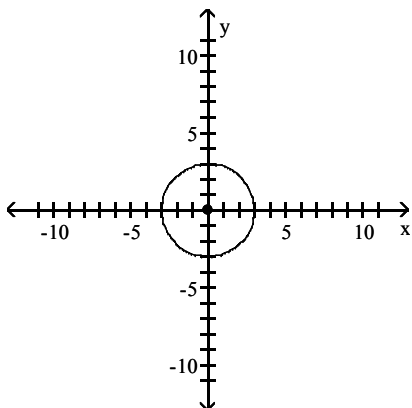

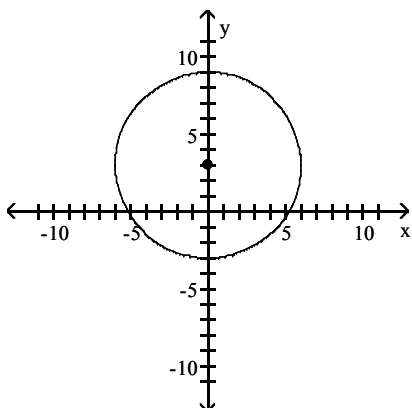32) $\left(-\dfrac{11}{8}, -\dfrac{3}{8}\right)$

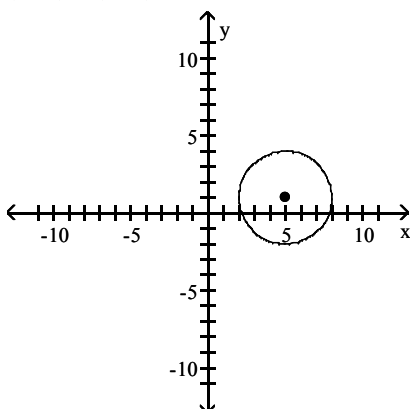33) $(x - 5)^2 + (y - 6)^2 = 4$

34)

35)

36) $(x - 1)^2 + (y + 3)^2 = 26$

37) $(h, k) = (5, 1);\ r = 3$

38) Std. form: $(x+4)^2 + (y+3)^2 = 37$; General form: $x^2 + y^2 + 8x + 6y - 12 = 0$;