1. Express in terms of *i:*

a. $\sqrt{-4}$ b. $\sqrt{-12}$ c. $\sqrt{-3}$

d. $\sqrt{-3} \bullet \sqrt{-12}$ e. $2i \bullet 5i$ f. $-7i \bullet 9i$

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2. Perform the indicated operations:

a. $(5-2i)-(3-7i)$ b. $(2+6i)+(3-7i)$

c. $(13+9i)-(-6+8i)$ d. $(-5+7i)+(5-2i)$

e. $(4-5i)^2$ f. $(7-2i)(7+2i)$

g. $(3+4i)(5+2i)$ h. $(2-3i)(2+3i)$

---

3. Solve by factoring:

a. $x^2 - x = 42$ b. $2x^2 - 5x = 7$

c. $y^2 + 10y + 21 = 0$ d. $x^2 + 10x = 39$

---

4. Solve by the square root principle:

a. $x^2 = 81$ b. $x^2 + 49 = 0$

c. $(x-3)^2 = 25$ d. $(x+10)^2 = 8$

e. $(y+5)^2 = -9$ f. $(y-1)^2 = 15$

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5. Fill in the missing term that makes the expression a perfect square trinomial. Factor the resulting expression.

a. $x^2 + 16x + \_\_\_\_\_$ b. $x^2 - 2x + \_\_\_\_\_$

c. $x^2 - 10x + \_\_\_\_\_$ d. $x^2 + 14x + \_\_\_\_\_$

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6. Solve by completing the square. Simplify any radicals:

a. $x^2 + 4x - 1 = 0$ b. $x^2 - 2x - 7 = 0$

c. $y^2 - 6y - 7 = 0$ d. $y^2 + 8y = -25$

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7. Solve by using the quadratic formula. Simplify any radicals:

a. $x^2 + 2x + 3 = 0$ b. $x^2 + 3x - 1 = 0$

c. $2x^2 + 10x - 5 = 0$ d. $x^2 + 5x = -6$

e. $x^2 + 6x - 12 = 0$ f. $2x^2 + 2x - 27 = 0$

---

8. Find the vertex and the equation of the axis of symmetry. Make a table of values and graph the equation on graph paper.

a. $y = x^2 + 2x - 4$ b. $y = -x^2 + 4x - 5$

c. $y = -2x^2 - 4x + 3$ d. $y = x^2 + 2x$

---

9. Identify the vertex, the equation of the axis of symmetry, and the y-intercept for each equation. Then graph each equation on a piece of graph paper.

a. $y = (x-2)^2 - 4$ Vertex: _____, Axis of symmetry: _____,

y-intercept: _____,

b. $y = -(x+3)^2 + 2$ Vertex: _____, Axis of symmetry: _____,

y- intercept: _____,

c. $y = (x+3)^2$ Vertex: _____, Axis of symmetry: _____,

y- intercept: _____,

---

10. Find the equation of each circle with the given center and radius. Graph the circle.

a. Center : $(-5,-3)$ Radius: r = 4

b. Center: $(4,-2)$ Radius: r = 5

c. Center: $(0,7)$ Radius: r = 3

---

11. Identify the center, the radius, and graph the circle.

a. $x^2 + y^2 = 9$ Center: _____Radius: _____

b. $(x-3)^2 + (y+4)^2 = 36$ Center: _____ Radius: _____

c. $(x+2)^2 + (y-3)^2 = 25$ Center: _____ Radius: _____

Write the equation of a circle in standard form by completing the square. Identify the center and radius.

d. $x^2 + y^2 + 6x + 18y + 65 = 0$

e. $x^2 + y^2 - 10x + 2y - 23 = 0$

1.a. $2i$	1.b. $2i\sqrt{3}$	1.c. $i\sqrt{3}$	1.d. -6
1.e. –10	1.f. 63	2.a. $2+5i$	2.b. $5 - i$
2.c. $19+i$	2.d. $5i$	2.e. $-9-40i$	2.f. 53
2.g. $7+26i$	2.h. 13	3.a. x = -6, and x = 7	3.b x= -1 and $x=\frac{7}{2}$
3.c. y = -7, and y = - 3	3.d. x = -13, and x = 3	4.a. x = -9, and x= 9	4.b. $x=-7i$ and $x=7i$
4.c. x = -2, and x = 8	4.d. $x=-10\pm2\sqrt{2}$	4.e. $y=-5\pm3i$	4.f. $y=1\pm\sqrt{15}$
5.a. 64; $(x+8)^2$	5.b. 1; $(x-1)^2$	5.c. 25; $(x-5)^2$	5.d. 49; $(x+7)^2$
6.a. $x=-2\pm\sqrt{5}$	6.b. $x=1\pm2\sqrt{2}$	6.c. y = -1, and y = 7	6.d. $y=-4\pm3i$
7.a. $x=-1\pm i\sqrt{2}$	7.b. $x=\frac{-3\pm\sqrt{13}}{2}$	7.c. $x=\frac{-5\pm\sqrt{35}}{2}$	7.d. x = -3, and x = -2
7.e. $x=-3\pm\sqrt{21}$	7.f. $x=\frac{-1\pm\sqrt{55}}{2}$	8.c. $y=-2x^2-4x+3$ Vertex: (-1, 5) Axis of symmetry: x = -1	8.d. $y=x^2+2x$ Vertex: (-1, - 1) Axis of symmetry: x = - 1
8.a. $y=x^2+2x-4$ Vertex: (-1, - 5) Axis of symmetry: x = -1	8.b. $y=-x^2+4x-5$ Vertex: (2, -1) Axis of symmetry: x = 2		

x	y
-3	-1
-2	-4
-1	-5
0	-4
1	-1

x	y
0	-5
1	-2
2	-1
3	-2
4	-5

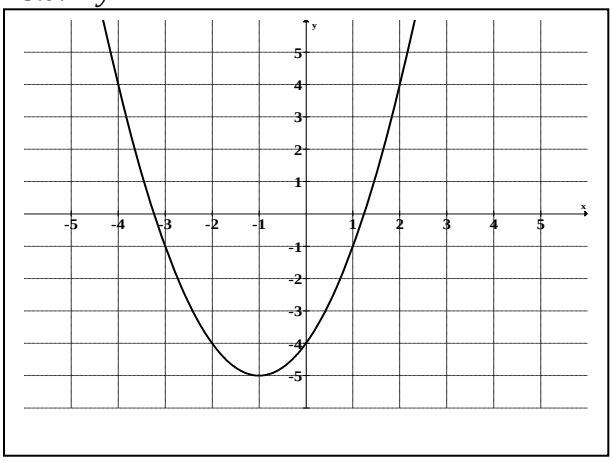
x	y
-3	-3
-2	3
-1	5
0	3
1	-3

x	y
-3	3
-2	0
-1	-1
0	0
1	3

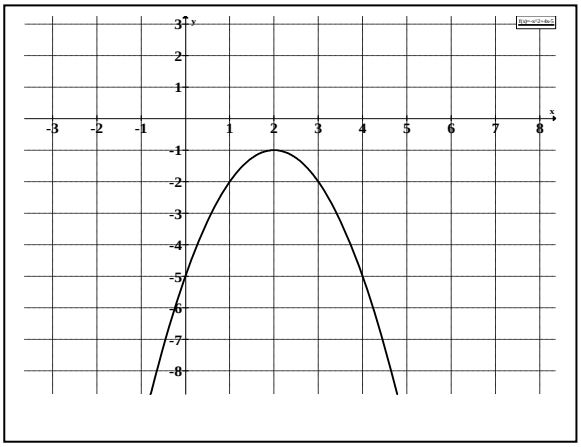
9.a. Vertex: (2, - 4) Axis of symmetry: x = 2, y-intercept: (0, 0)	9.b. Vertex: (-3, 2) Axis of symmetry: x = -3 , y intercept: (0, -7)	9c. Vertex: $(-3,0)$ Axis of symmetry: x = -3, y-intercept: $(0,9)$.
10.a. $(x+5)^2+(y+3)^2=16$	10.b. $(x-4)^2+(y+2)^2=25$	10.c. $x^2+(y-7)^2=9$
11.a. Center: (0, 0) Radius = 3	11.b Center (3, - 4) Radius = 6	11.c. Center (- 2, 3) Radius = 5
11d. Center (–3, –9) Radius = 5	11e Center (5, –1) Radius = 7	

Graphs for Review Exam # 4

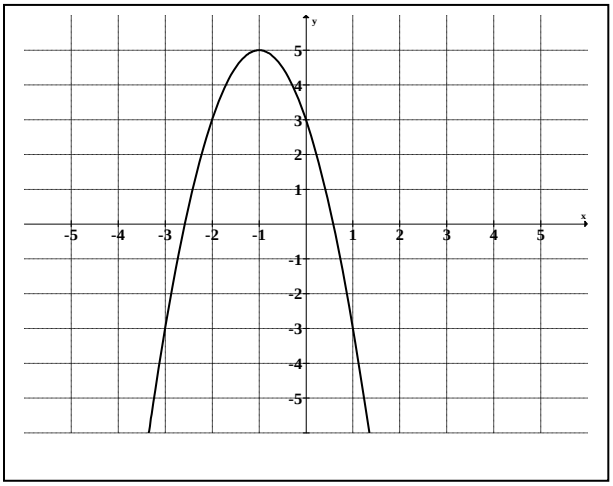
8.a. $y = x^2 + 2x - 4$



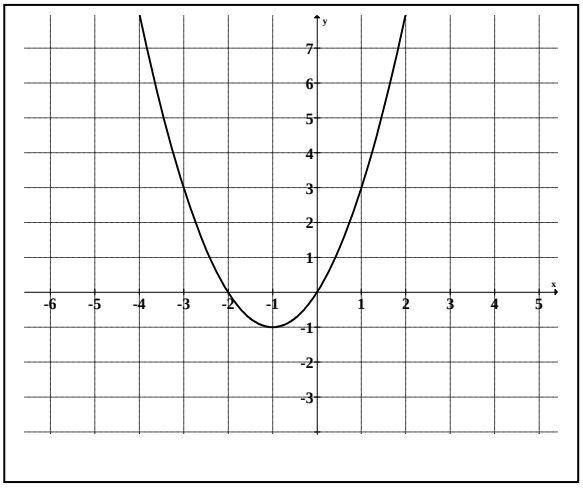
8.b. $y = -x^2 + 4x - 5$



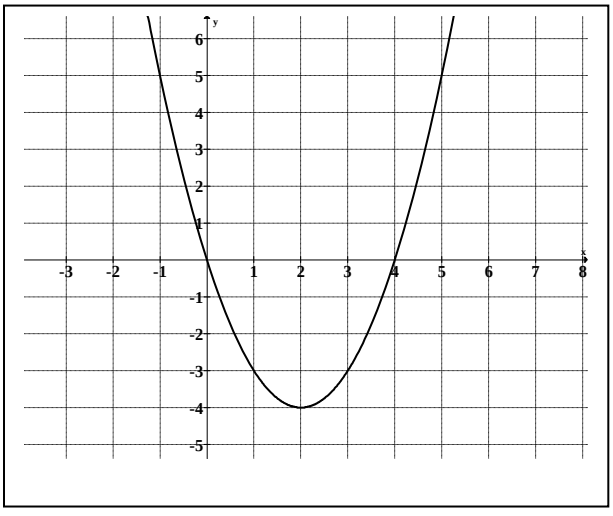
8.c. $y = -2x^2 - 4x + 3$



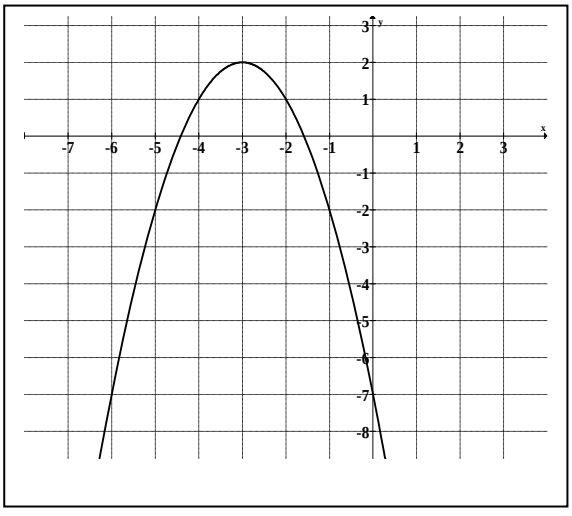
8.d. $y = x^2 + 2x$



9.a. $y = (x-2)^2 - 4$

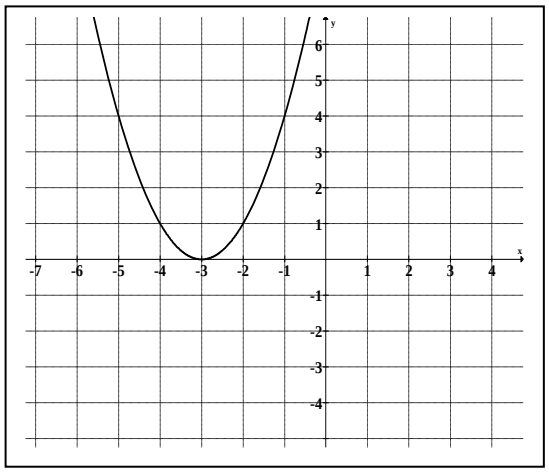


9.b. $y = -(x+3)^2 + 2$

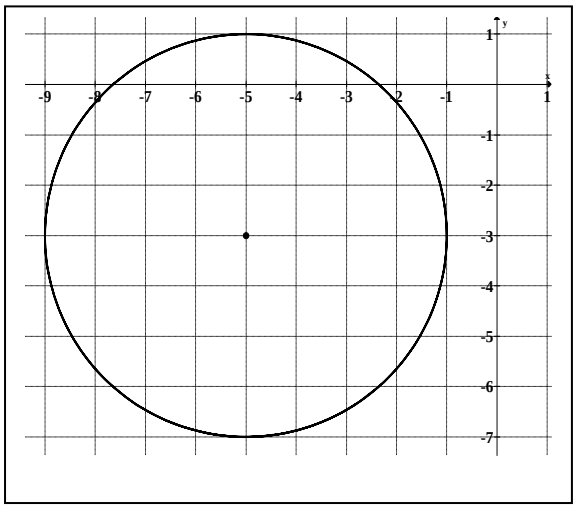


Graphs for Review Exam # 4

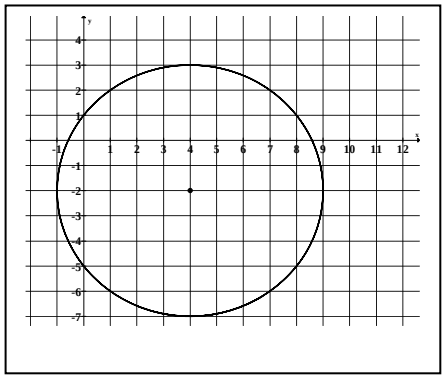
9.c. $y=(x+3)^2$



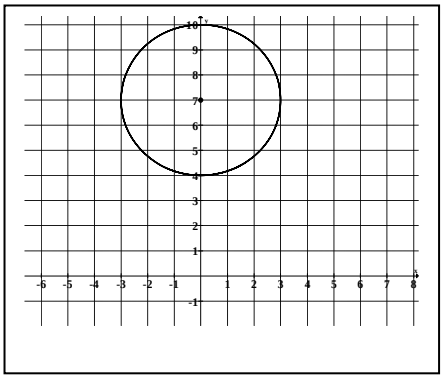
10.a. $(x+5)^2+(y+3)^2=16$



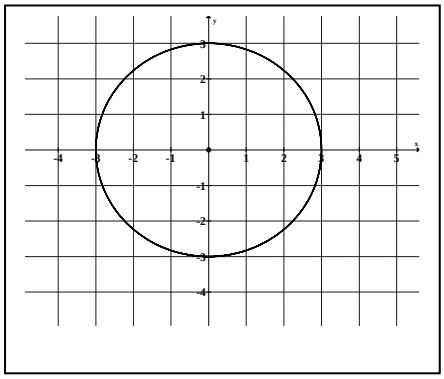
10.b. $(x-4)^2+(y+2)^2=25$



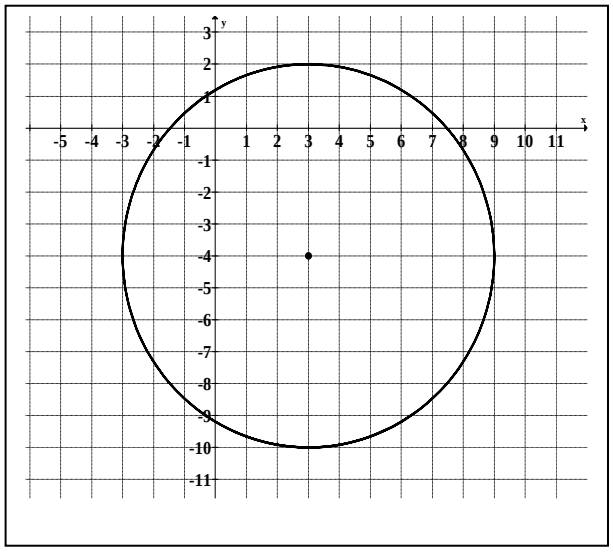
10.c. $x^2+(y-7)^2=9$



11.a. $x^2+y^2=9$



11.b. $(x-3)^2+(y+4)^2=36$



11.c. $(x+2)^2+(y-3)^2=25$