

MATH 110 Review Problem Set 0.C

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The following problems based on Appendix C of the textbook will help you review. *You do not need to hand in solutions to these problems.*

1. (Based on C.1–4) Find an equation of a circle that satisfies the given conditions.
 - (a) Center $(4, 3)$, radius 5
 - (b) Center $(-2, 7)$, radius 3
 - (c) Center at the origin, passes through $(-5, 12)$
 - (d) Center $(3, -8)$, passes through the origin
2. (Based on C.5–9) Show that the equation represents a circle, and find its center and radius.
 - (a) $x^2 + y^2 + 2x = 0$
 - (b) $x^2 + y^2 + 10x - 6y + 8 = 0$
 - (c) $x^2 + y^2 - y = 6$
 - (d) $3x^2 + 3y^2 + x - 2y - 5 = 0$
3. (Based on C.11–30) Identify the type of curve and sketch the graph. Do not plot points. Just use the standard graphs given in the textbook and shift if necessary.
 - (a) $9x^2 + y^2 = 1$
 - (b) $x = y^2 + 4$
 - (c) $16y^2 - 9x^2 = 25$
 - (d) $y^2 - x^2 + 4y = 10$
4. (Based on C.33–34) Sketch the region bounded by the curves.
 - (a) $y = -x^2$, $y = 5x$
 - (b) $y = x^2 - 1$, $y = 2x + 2$
5. (Based on C.31–32) Identify the type of curve and sketch the graph. Do not plot points. Just use the standard graphs given in the textbook and shift if necessary.
 - (a) $x^2 + 4y^2 - 32y = 16$
 - (b) $9x^2 - 4y^2 - 6x + 5 = 0$
6. (Based on C.35) Find an equation of the parabola with vertex $(1, 5)$ that opens downward and passes through the point $(-1, -4)$.
7. (Based on C.37–40) Sketch the graph of the set.

(a) $\{(x,y)|x^2 + y^2 \leq 4\}$

(c) $\{(x,y)|y > x^2 - 2x\}$

(b) $\{(x,y)|x^2 + y^2 > 1\}$

(d) $\{(x,y)|16x^2 + 9y^2 \leq 25\}$

8. (Based on C.10) Under what condition on the coefficients a , b , and c does the equation $x^2 + 4y^2 + ax + by + c = 0$ represent an ellipse? When that condition is satisfied, find the center of the ellipse.

You may find the following additional exercises from Appendix C helpful.

C C-level: 1–4, 5–9, 11–30, 33–34;

B-level: 10, 31–32, 35–36, 37–40