Trig/Precalc
Chapter 10 Review

Name: Answer Key

For #1-3 refer to the ellipse represented by $9x^2 + 16y^2 - 18x + 64y - 71 = 0$.

1. Find the coordinates of the center.

   A. (1, 2) **B.** (1, -2) **C.** (-1, 2) **D.** (-2, 1)

2. Find the coordinates of the foci.

   A. $(1 \pm \sqrt{7}, -2)$ **B.** $(1, -2 \pm \sqrt{7})$ **C.** (5, -2), (-3, -2) **D.** (1, 4), (1, -8)

3. Find the coordinates of the vertices.

   A. (1, 2), (1, -6), (4, -2), (-2, -2) **B.** (4, 2), (-2, 2), (1, 1), (1, -5)

   C. (5, -2), (-3, -2), (1, 1), (1, -5) **D.** (5, -2), (-3, -2), (1, 2), (1, -6)

4. Find the distance between points at (m + 4, n) and (m, n – 3).

   A. 3.5 **B.** 5 **C.** 1 **D.** 7

5. Write the standard form of the equation of the circle that is tangent to the line x = -3 and has its center at (2, -7).

   A. $(x-2)^2 + (y+7)^2 = 25$ **B.** $(x-2)^2 + (y+7)^2 = 5$

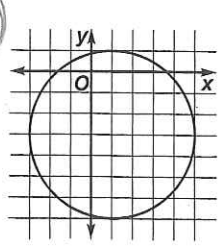
   C. $(x-2)^2 + (y+7)^2 = 16$ **D.** $(x+2)^2 + (y-7)^2 = 25$

6. Identify the conic section represented by $9y^2 + 4x^2 - 108y + 24x = -144$.

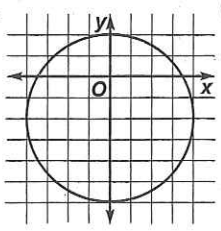
   A. parabola **B.** hyperbola **C.** ellipse **D.** circle

7. Which is the graph of $6x^2 - 12x + 6y^2 + 36y = 36$?

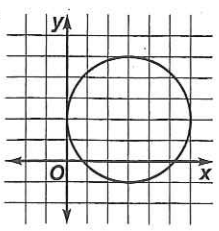
   A.



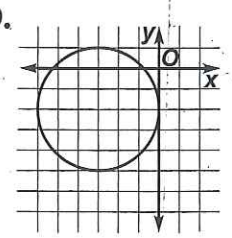
   B.



   C.



   D.



For #8 & 9 refer to the hyperbola represented by $-2x^2 + y^2 + 4x + 6y = -3$.

8. Write the equations of the asymptotes.

   A. $y + 3 = \pm 2(x - 1)$ **B.** $y + 3 = \pm \frac{1}{2}(x - 1)$

   C. $y + 3 = \pm \sqrt{2}(x - 1)$ **D.** $y + 3 = \pm \frac{\sqrt{2}}{2}(x - 1)$

9. Find the coordinates of the foci.

A. $(1\pm\sqrt{2},-3)$ **B.** $(1\pm\sqrt{6},-3)$ **C.** $(1,-3\pm\sqrt{2})$ **D.** $(1,-3\pm\sqrt{6})$

10. Write the standard form of the equation of the hyperbola for which the transverse axis is 4 units long and the coordinates of the foci are $((1,-4\pm\sqrt{7})$.

A. $\frac{(x-1)^2}{3}-\frac{(y+4)^2}{4}=1$ **B.** $\frac{(y+4)^2}{4}-\frac{(x-1)^2}{3}=1$

C. $\frac{(y+4)^2}{3}-\frac{(x-1)^2}{4}=1$ **D.** $\frac{(x-1)^2}{4}-\frac{(y+4)^2}{3}=1$

10. Find the coordinates of the vertex and the equation of the axis of symmetry for the parabola represented by $x^2+4x-6y+10=0$.

A. (-2, 1), $y=1$ **B.** (1, -2), $y=-2$ **C.** (-2, 1), $x=-2$ **D.** (1, -2), $x=1$

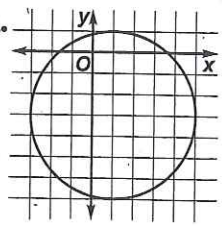
11. Write the standard form of the equation of the parabola whose directrix is $x=-1$ and whose focus if at (5, -2).

A. $(y+2)^2=12(x+2)$ **B.** $y-2=12(x+2)^2$

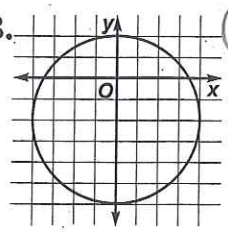
C. $x+2=\frac{1}{12}(y+2)^2$ **D.** $x-2=\frac{1}{12}(y+2)^2$

12. Which is the graph of $(x-3)^2+(y-2)^2=9$?

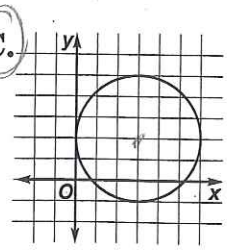
A.



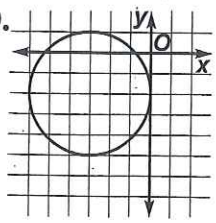
B.



C.



D.



13. Write $9x^2+54x+4y^2-16y+61=0$ in standard form.

A. $\frac{(x-3)^2}{4}+\frac{(y+2)^2}{9}=1$ **B.** $\frac{(x+3)^2}{4}+\frac{(y-2)^2}{9}=1$

C. $\frac{(x-3)^2}{9}+\frac{(y+2)^2}{4}=1$ **D.** $\frac{(x+3)^2}{9}+\frac{(y-2)^2}{4}=1$

1. $9x^2 + 16y^2 - 18x + 64y - 71 = 0$

$9x^2 - 18x + 16y^2 + 64y = 71$

$9(x^2 - 2x + \underline{1}) + 16(y^2 + 4y + \underline{4}) = 71 + \underline{9} + \underline{64}$

$\frac{9(x-1)^2}{144} + \frac{16(y+2)^2}{144} = \frac{144}{144}$

$\frac{(x-1)^2}{16} + \frac{(y+2)^2}{9} = 1$ $\quad (1, -2)$

2. $a = 4 \quad b = 3$

$a^2 - b^2 = c^2$ $\quad (h \pm c, k)$

$16 - 9 = c^2$ $\quad (1 \pm \sqrt{7}, -2)$

$\sqrt{7} = c$

3. $(h \pm a, k)$ $\quad (h, k \pm b)$

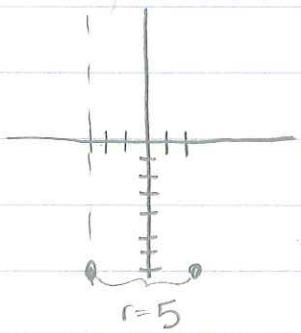
$(1 \pm 4, -2)$ $\quad (1, -2 \pm 3)$

$(5, -2)(-3, -2)$ $\quad (1, 1)$ $\quad (1, -5)$

4. $\sqrt{(m - (m+4))^2 + (n - 3 - n)^2}$

$\sqrt{16 + 9}$

5

5. 

$(x-2)^2 + (y+7)^2 = 25$

6. $9y^2 + 4x^2 - 108y + 24x = -144$

$9y^2 - 108y + 4x^2 + 24x = -144$

$9(y^2 - 12y + \underline{36}) + 4(x^2 + 6x + \underline{9}) = -144 + \underline{324} + \underline{36}$

$9(y-6)^2 + 4(y+3)^2 = 216$

$\frac{(y-6)^2}{24} + \frac{(y+3)^2}{54} = 1$

Ellipse

7. $6x^2 - 12x + 6y^2 + 36y = 36$

$6(x^2 - 2x + \underline{1}) + 6(y^2 + 6y + \underline{9}) = 36 + \underline{6} + \underline{54}$

$6(x-1)^2 + 6(y+3)^2 = 96$

$(x-1)^2 + (y+3)^2 = 16$

8. $-2x^2 + y^2 + 4x + 6y = -3$

$-2(x^2 - 2x + \underline{1}) + (y^2 + 6y + \underline{9}) = -3 + \underline{-2} + \underline{9}$

$-2(x-1)^2 + (y+3)^2 = 4$

$-\frac{(x-1)^2}{2} + \frac{(y+3)^2}{4} = 1$

$\frac{(y+3)^2}{4} - \frac{(x-1)^2}{2} = 1$

$a = 2 \quad b = \sqrt{2} \quad \frac{2}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{2\sqrt{2}}{2} = \sqrt{2}$

$y + 3 = \pm\sqrt{2}(x-1)$

$2^2 + \sqrt{2}^2 = c^2$

$4 + 2 = c^2$

$\sqrt{6} = c$

9. $(1, -3 \pm \sqrt{6})$

10. $a=2$ $\quad C:(1,-4)$ $\quad 2^2+b^2=\sqrt{7}^2$

$c=\sqrt{7}$ $\quad 4+b^2=7$

$b=\sqrt{3}$

$$\frac{(y+4)^2}{4}-\frac{(x-1)^2}{3}=1$$

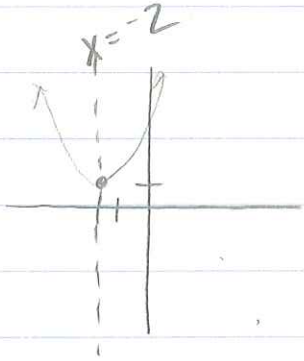
10. $x^2+4x-6y+10=0$

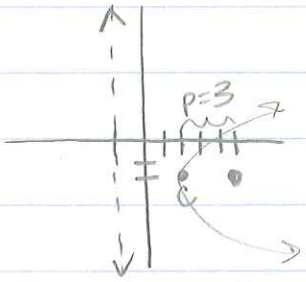
$(x^2+4x+\underline{4})=6y-10+4$

$(x+2)^2=6(y-1)$

vertex: $(-2,1)$

Symm: $x=-2$



11. 

center: $(2,-2)$

$(y+2)^2=12(x-2)$

12. center: $(3,2)$ radius $=3$

13. $9x^2+54x+4y^2-16y+61=0$

$9(x^2+6x+\underline{9})+4(y^2-4y+\underline{4})=-61+\underline{81}+\underline{16}$

$9(x+3)^2+4(y-2)^2=36$

36

$$\frac{(x+3)^2}{4}+\frac{(y-2)^2}{9}=1$$