

Review 6A

Math 222

1. Find the center and radius of the circle $2x^2 + y^2 - 12x + 16y - 31 = 0$
2. Complete the square to find the vertex, focus and directrix of the parabola $x^2 - 8y - 2x - 7 = 0$ and give a rough sketch of the graph.
3. Find the vertex, focus and directrix of the parabola $x^2 = 12y$.
4. Find the equation of the ellipse with foci $(\pm 2, 0)$ and $e = \frac{1}{2}$.
5. Find the equation of the ellipse with foci $(3, 0)$ and $(3, 8)$ and major axis length 10.
6. Find the points on the ellipse $x^2 + \frac{y^2}{9} = 1$ where the tangent line has y -intercept $(0, 9)$.
7. Sketch the graph and state the foci and asymptotes of the hyperbola $\frac{x^2}{4} - y^2 = 1$.
8. Put into standard form and sketch the graph of $4x^2 - y^2 + 16x + 2y - 1 = 0$.
9. What is the eccentricity of $6x^2 = y + 2x$?
10. Find the equation of the conic section (in standard form) with directrix $x = 2$, focus $(3, 0)$ and eccentricity $e = \frac{3}{2}$
11. A take-home problem like 1-9 on page 557 of the text

Answers to problems above: 1. center $(3, -4)$, $r = \frac{9\sqrt{2}}{2}$ 2. $(x - 1)^2 = 8(y + 1)$ vertex $(1, -1)$, focus $(1, 1)$, directrix $y = -3$ 3. V $(0, 0)$, F $(0, 3)$, D: $y = -3$ 4. $\frac{x^2}{16} + \frac{y^2}{12} = 1$ 5. $\frac{(x-3)^2}{9} + \frac{(y-4)^2}{25} = 1$ 6. $(\pm \frac{2}{3}\sqrt{2}, 1)$ 7. F: $(\pm\sqrt{5}, 0)$, A: $y = \pm \frac{1}{2}x$ 8. $\frac{(x+2)^2}{4} - \frac{(y-1)^2}{16} = 1$ 9. $e = 1$ 10. $\frac{(x-\frac{6}{5})^2}{\frac{36}{25}} - \frac{y^2}{5} = 1$ 11.

Review 6B

Math 222

1. Find the center and radius of the circle $x^2 + y^2 - 4x + 7y + 3 = 0$
2. Complete the square to find the vertex, focus and directrix of the parabola $y^2 - 4y + 2x + 4 = 0$ and give a rough sketch of the graph.
3. Find the vertex, focus and directrix of the parabola $x = 3(y - 2)^2$.
4. Find the equation of the ellipse with minor axis length 8 and foci $(0, \pm 3)$.
5. Find the equation of the ellipse with foci $(1, -1)$ and $(3, -1)$ and $e = \frac{1}{3}$.
6. Find the equation of the ellipse which contains the point $(1, \frac{\sqrt{3}}{2})$ and whose tangent line through this point is $y = -\frac{\sqrt{3}}{6}x + \frac{2\sqrt{3}}{3}$.
7. Sketch the graph and state the foci and asymptotes of the hyperbola $\frac{(y-1)^2}{16} - \frac{(x+1)^2}{9} = 1$.
8. Put into standard form and sketch the graph of $x^2 + 9y^2 - 4x - 32 = 0$.
9. What is the eccentricity of $9x^2 + 4y^2 = 36$?
10. Find the equation of the conic section (in standard form) with directrix $x = 3$, focus $(2, 0)$ and eccentricity $e = \frac{1}{3}$
11. A take-home problem like 1-9 on page 557 of the text

Answers to problems above: 1. center $(2, -\frac{7}{2})$, $r = \frac{\sqrt{53}}{2}$ 2. $(y - 2)^2 = -2x$ vertex $(0, 2)$, focus $(-\frac{1}{2}, 2)$, directrix $x = \frac{1}{2}$ 3. V $(0, 2)$, F $(\frac{1}{12}, 2)$, D: $x = -\frac{1}{12}$ 4. $\frac{x^2}{64} + \frac{y^2}{73} = 1$ 5. $\frac{(x-2)^2}{9} + \frac{(y+1)^2}{8} = 1$ 6. $\frac{x^2}{4} + y^2 = 1$ 7. F: $(-1, 1 \pm 5)$, A: $y - 1 = \pm \frac{4}{3}(x + 1)$ 8. $\frac{(x-2)^2}{36} + \frac{y^2}{4} = 1$ 9. $e = \frac{\sqrt{5}}{3}$ 10. $\frac{(x-\frac{15}{4})^2}{64} - \frac{y^2}{8} = 1$ 11.