

CHAPTER # 11 Review

① Find the focus and directrix of the parabola

a) $x^2 = 8y$

Vertex $(0,0)$
Focus $(0,2)$
Directrix $y = -2$

b) $y^2 = 5x$

Focus $(5/4, 0)$
Directrix $x = -5/4$

② Find the vertices, foci and eccentricity of the ellipse. $e = c/a$

a) $\frac{x^2}{25} + \frac{y^2}{9} = 1$
Vertices $(\pm 5, 0)$
Foci $(\pm 4, 0)$
 $e = 4/5$

b) $y^2 + 4x^2 = 16$
Vertices $(0, \pm 4)$
Foci $(0, \pm 2\sqrt{3})$
 $e = \sqrt{3}/2$

③ Find the equation of the ellipse that satisfies the given conditions

a) Foci $(\pm 4, 0)$ vertices $(\pm 5, 0)$ $\frac{x^2}{25} + \frac{y^2}{9} = 1$

b) major axis of 4 units, minor axis of 2
foci on y axis.

$\frac{x^2}{1} + \frac{y^2}{4} = 1$

④ Find the vertices, foci and asymptotes of the hyperbola.

a) $\frac{y^2}{9} - \frac{x^2}{16} = 1$

b) $x^2 - 4y^2 - 8 = 0$

Vertices $(0, \pm 3)$
Foci $(0, \pm 5)$
asymptotes $y = \pm 3/4x$

Vertices $(\pm 2\sqrt{2}, 0)$
foci $(\pm \sqrt{10}, 0)$
asymptotes $y = \pm \frac{1}{2}x$
or $y = \frac{\sqrt{2}}{\sqrt{2}}x = \frac{x}{\sqrt{2}} = \frac{1}{\sqrt{2}}x$

5) Find the center, foci and vertices of the ellipse

$$a) \frac{(x-3)^2}{16} + (y+3)^2 = 1$$

Center $(3, -3)$
Vertices $(7, -3) + (-1, -3)$
Foci $(3 \pm \sqrt{5}, -3)$

6) Find the ~~center~~ vertex, focus, and directrix of the parabola

$$a) (x-3)^2 = 8(y+1)$$

Vertex $(3, -1)$
Focus $(3, 1)$
Directrix $y = -3$

7) Find the center, foci, vertices and asymptotes of the hyperbola.

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

Center $(-1, 0)$

foci $(-1 \pm \sqrt{5}, 0)$

Vertices $(-1, 1) + (-1, -1)$

asymptotes $y = \pm \frac{1}{2}(x+1)$

$$b) \frac{(x+1)^2}{9} - \frac{(y-3)^2}{16} = 1$$

Center $(-1, 3)$

foci $(-6, 3) + (4, 3)$

Vertices $(-4, 3) + (2, 3)$

asymptotes $y = \pm \frac{4}{3}(x+1) + 3$