

Day 57 (10/28)

(P: 547)

(§12.2) Review of conic sections

circle

 $x^2 + y^2 = 25$
 $\left(\frac{x}{5}\right)^2 + \left(\frac{y}{5}\right)^2 = 1$

ellipse

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

hyperbola

 $y = -3(x-2)^2$

parabola

 $\left(\frac{x}{2}\right)^2 + \left(\frac{y}{7}\right)^2 = 1$

$$\left(\frac{x+7}{3}\right)^2 +$$

x-coord. center

$$\left(\frac{x-h}{r_x}\right)^2 +$$

x-radius

$$\left(\frac{y-10}{5}\right)^2 = 1$$

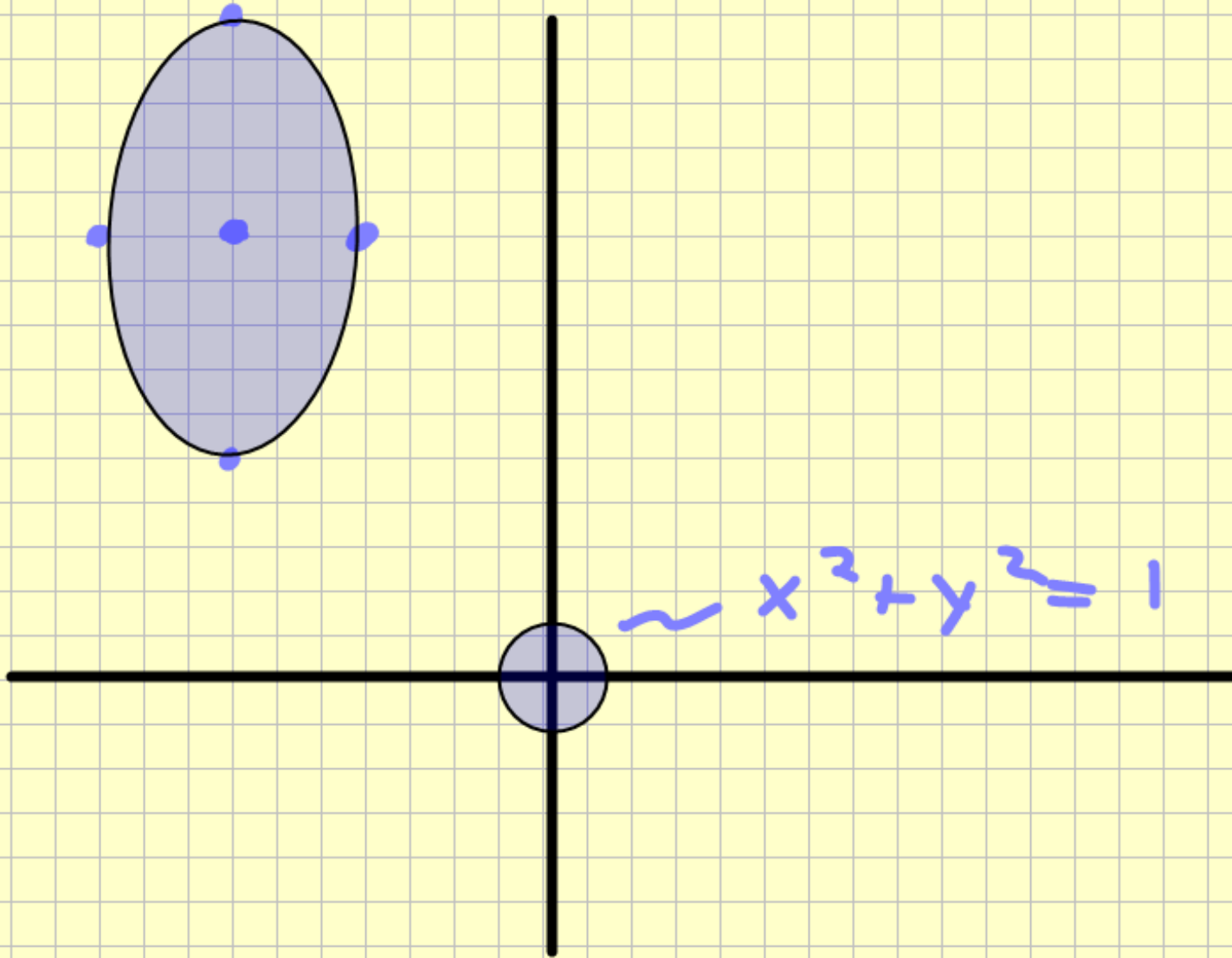
y-coord. center

$$\left(\frac{y-k}{r_y}\right)^2 = 1$$

y-radius

$$\left(\frac{x+7}{3}\right)^2 + \left(\frac{y-10}{5}\right)^2 = 1$$

center (h, k)
 $(-7, 10)$



General form of conic section

$$Ax^2 + Bxy + Cy^2 + Dx + Ey + F = 0$$

$$\left(\frac{x+7}{3}\right)^2 + \left(\frac{y-10}{5}\right)^2 = 1$$

$$\frac{(x+7)^2}{3^2} + \frac{(y-10)^2}{5^2} = 1$$

$$25 \left[\frac{x^2 + 14x + 49}{9} \right] + 9 \left[\frac{y^2 - 20y + 100}{25} \right] = 225$$

$$25(x^2 + 14x + 49) + 9(y^2 - 20y + 100) = 225$$

$$25x^2 + 350x + 1225 + 9y^2 - 180y + 900 = 225$$

$$25x^2 + 9y^2 + 350x - 180y + 1900 = 0$$

Hyperbola

$$-\left(\frac{x+5}{2}\right)^2 + \left(\frac{y-4}{3}\right)^2 = 1$$

\downarrow x-dilation
x-radius

\downarrow y-dilation
y-radius

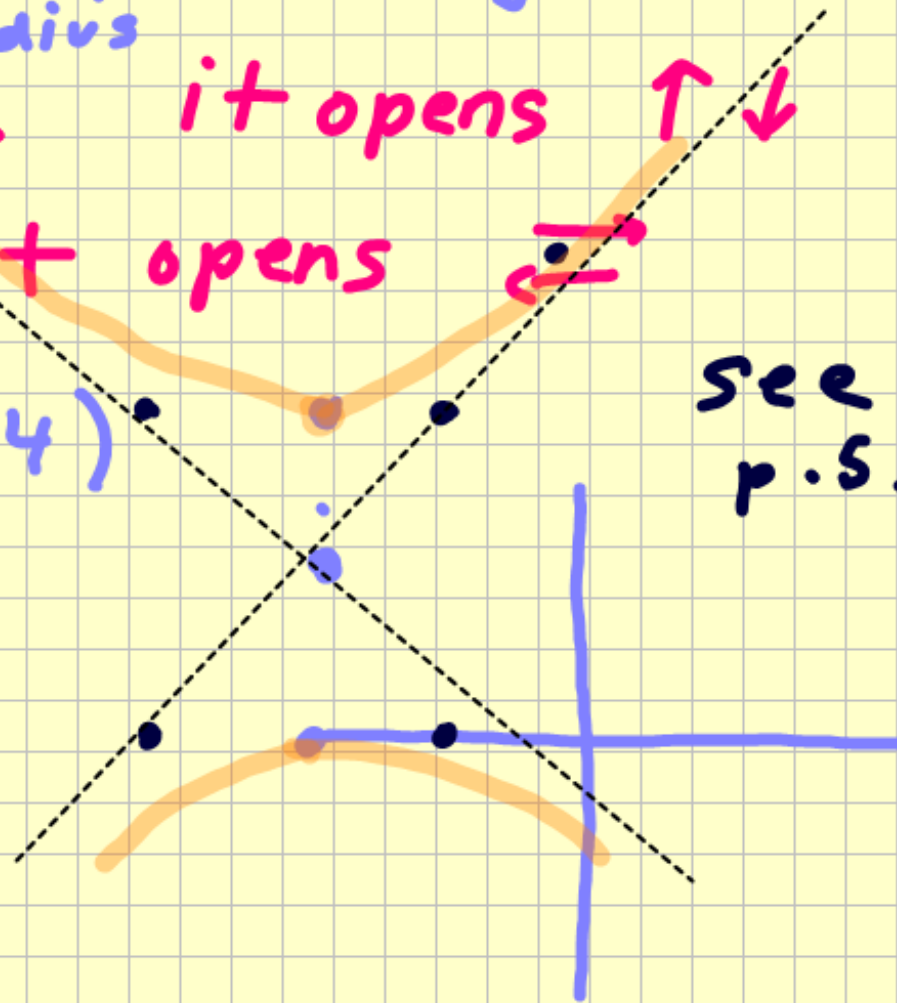
since y is pos. it opens $\uparrow \downarrow$
if x is pos. it opens $\leftarrow \rightarrow$

center $(-5, 4)$

see
p. 550

asymptotes:

$$m = \pm \frac{y\text{-radius}}{x\text{-radius}}$$



Homework (Classwork)

p. 554 # 5-11, 21-25 odd

↓
odd

only do parts a - c

5-11