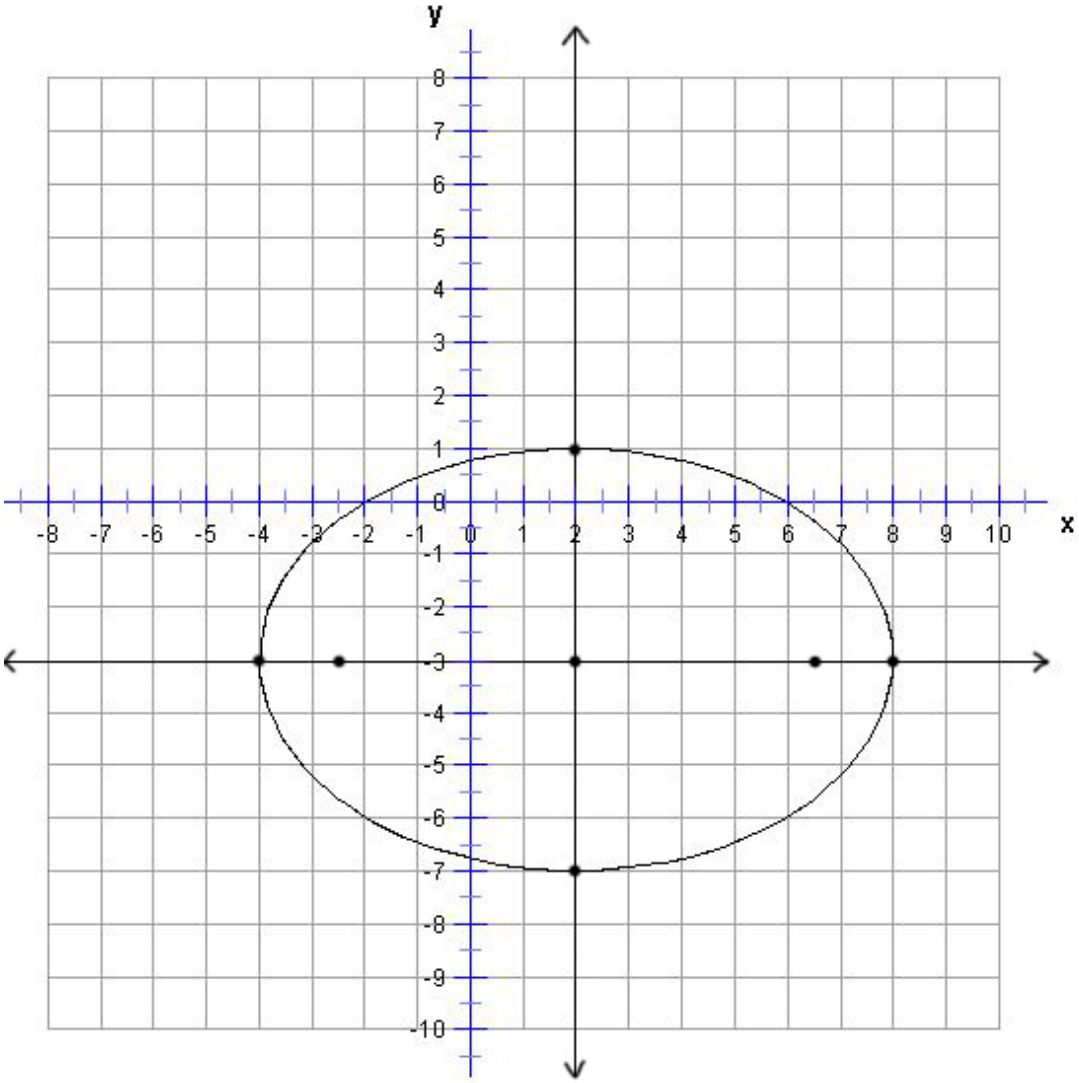
Pre-Calculus Homework #10 – Answer Key

1) Ellipse $\dfrac{(x-2)^2}{36}+\dfrac{(y+3)^2}{16}=1$ Vertices = $(-4,-3),(8,-3),(2,1),(2,-7)$

Center = $(2,-3)$ Foci = $(2+2\sqrt{5},-3),(2-2\sqrt{5},-3)$ Major axis = 12

Minor axis = 8 Axes of symmetry: $x=2$, $y=-3$



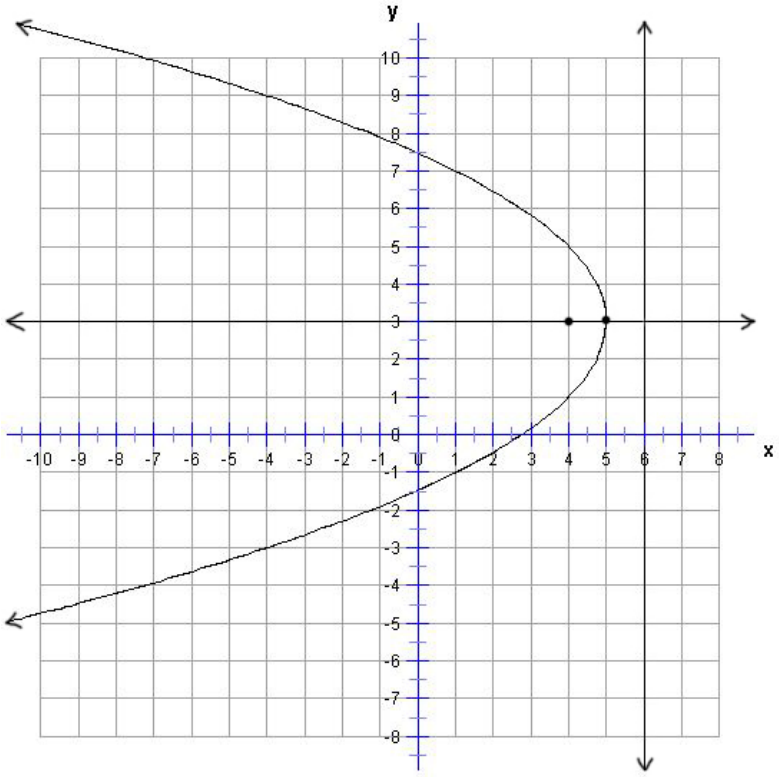
2) $(x+1)^2+(y-2)^2=98$

3) Parabola $y=\dfrac{1}{20}(x+6)^2-2$

4) Ellipse $\dfrac{(x+3)^2}{9}+\dfrac{(y-1)^2}{64}=1$

5) Parabola $x=\frac{-1}{4}(y-3)^2+5$ Vertex = $(5,3)$ Focus = $(4,3)$

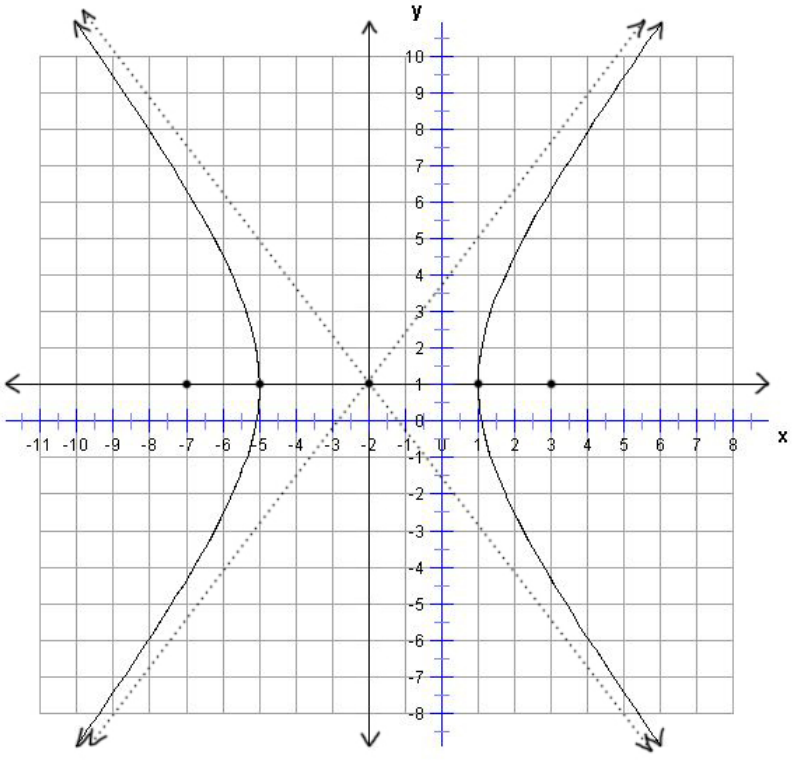
Directrix: $x=6$ Axis of symmetry: $y=3$



6) Hyperbola $\frac{(x+2)^2}{9}-\frac{(y-1)^2}{16}=1$ Vertices = $(-5,1),(1,1)$

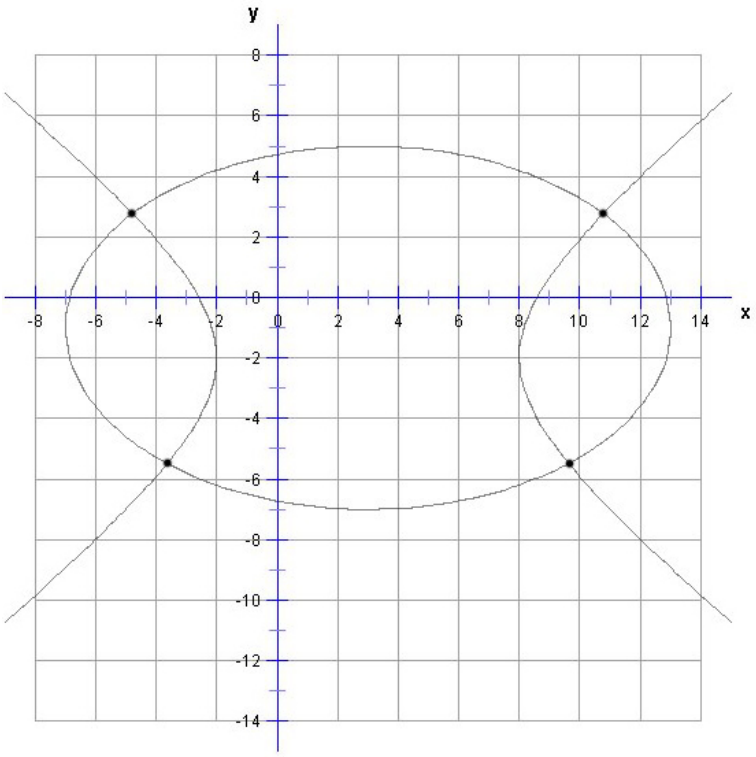
Center = $(-2,1)$ Foci = $(-7,1),(3,1)$ Axes of symmetry: $x=-2,\ y=1$

Asymptotes: $y=\frac{4}{3}x+\frac{11}{3}$ $y=\frac{-4}{3}x-\frac{5}{3}$



7) Hyperbola $\dfrac{(y-5)^2}{81}-\dfrac{(x+4)^2}{64}=1$

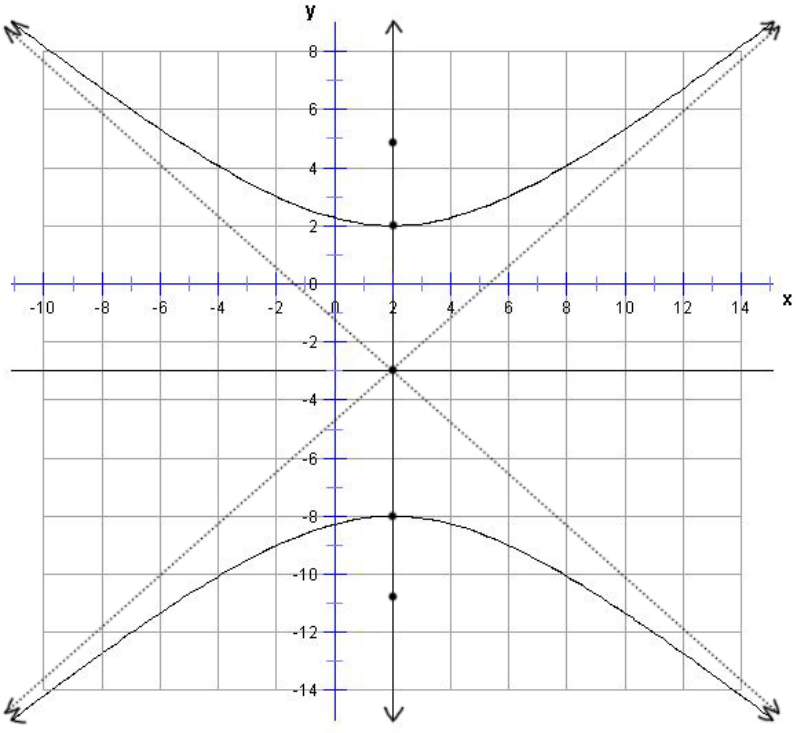
8) $x=-4.8, y=2.8 \quad x=-3.6, y=-5.5 \quad x=10.8, y=2.8 \quad x=9.6, y=-5.5$



9) Hyperbola $\dfrac{(y+3)^2}{25}-\dfrac{(x-2)^2}{36}=1$ Vertices= $(2,-8),(2,2)$ Center = $(2,-3)$

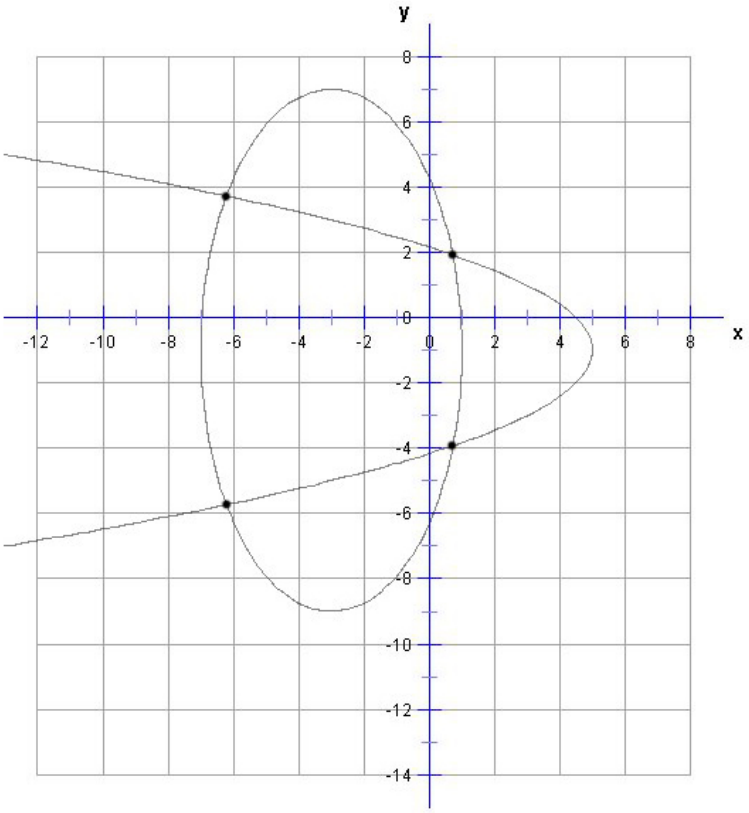
Foci = $(2,-3+\sqrt{61}),(2,-3-\sqrt{61})$ Axes of symmetry: $x=2$, $y=-3$

Asymptotes: $y=\dfrac{5}{6}x-\dfrac{14}{3} \quad y=\dfrac{-5}{6}x-\dfrac{4}{3}$



10) Hyperbola $\dfrac{(x+4)^2}{25}-\dfrac{(y+3)^2}{81}=1$

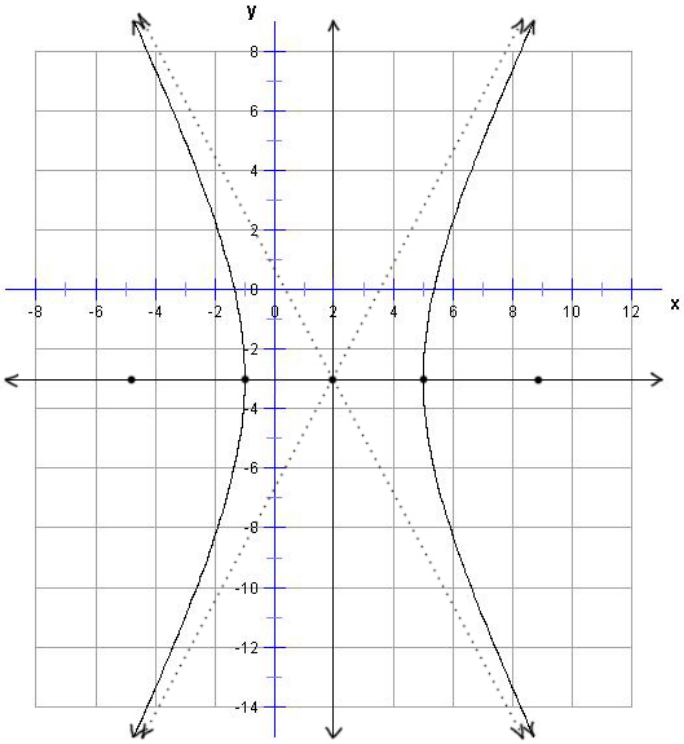
11) $x=.7, y=1.9 \quad x=-6.2, y=3.7 \quad x=.7, y=-3.9 \quad x=-6.2, y=-5.7$



12) Hyperbola $\dfrac{(x-2)^2}{9}-\dfrac{(y+3)^2}{36}=1$ Vertices= $(5,-3),(-1,-3)$ Center = $(2,-3)$

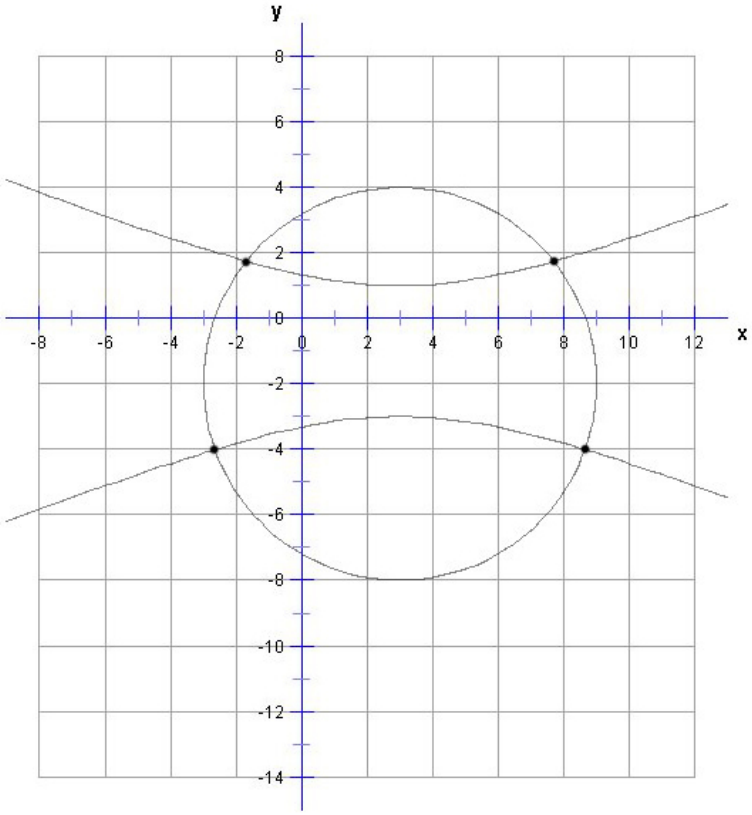
Foci = $(2+3\sqrt{5},-3),(2-3\sqrt{5},-3)$ Axes of symmetry: $x=2$, $y=-3$

Asymptotes: $y=2x-7 \quad y=-2x+1$



13) Ellipse $\dfrac{(x-8)^2}{16}+\dfrac{(y-5)^2}{81}=1$

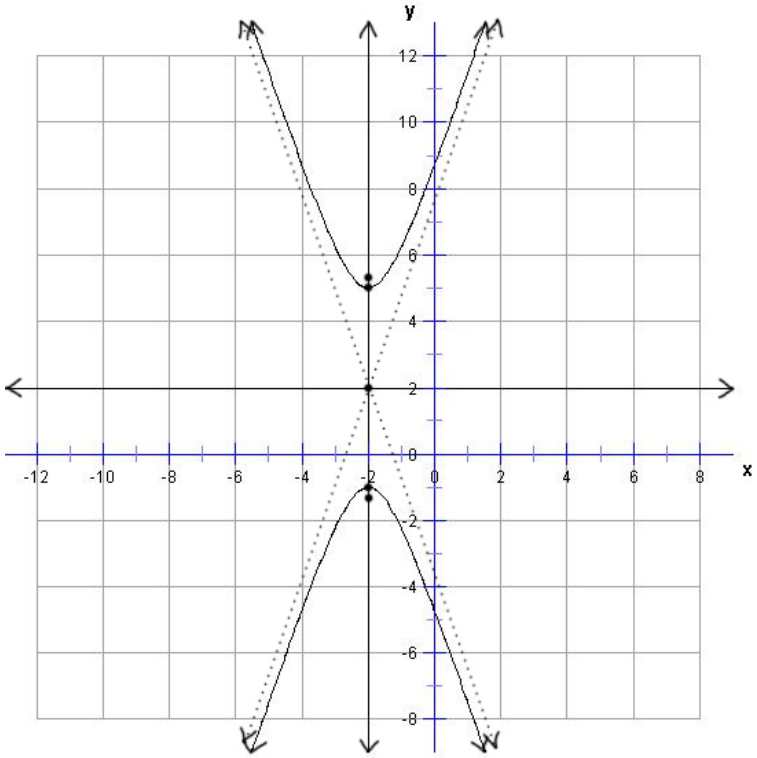
14) $x=7.7, y=1.7$ $x=-1.7, y=1.7$ $x=8.7, y=-4.0$ $x=-2.7, y=-4.0$



15) Hyperbola $\dfrac{(y-2)^2}{9}-\dfrac{(x+2)^2}{1}=1$ Vertices= $(-2,5),(-2,-1)$ Center = $(-2,2)$

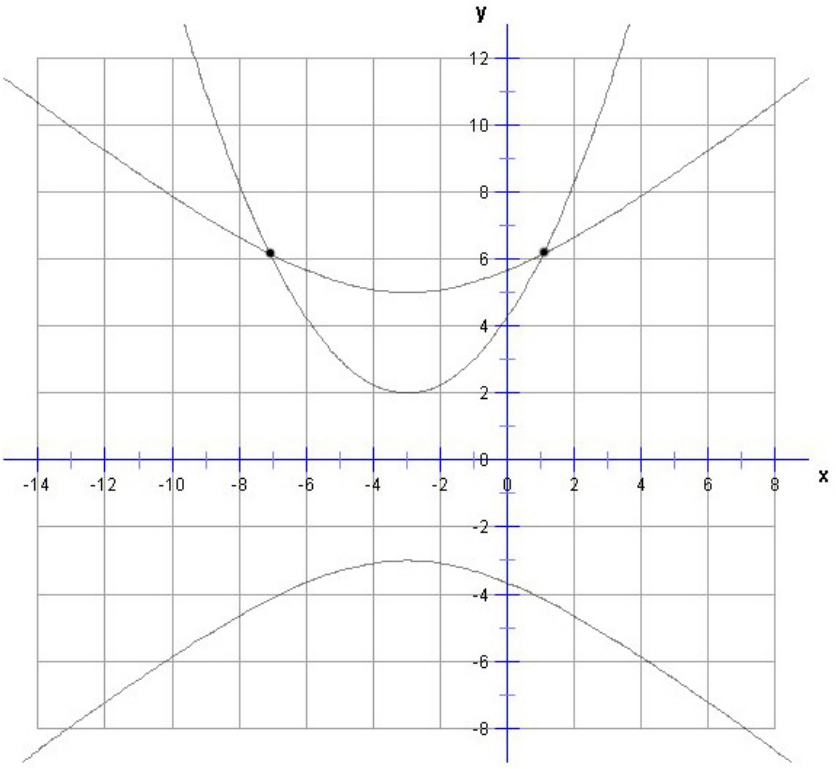
Foci = $(-2,2+\sqrt{10}),(-2,2-\sqrt{10})$ Axes of symmetry: $x=2$, $y=-2$

Asymptotes: $y=3x+8$ $y=-3x-4$



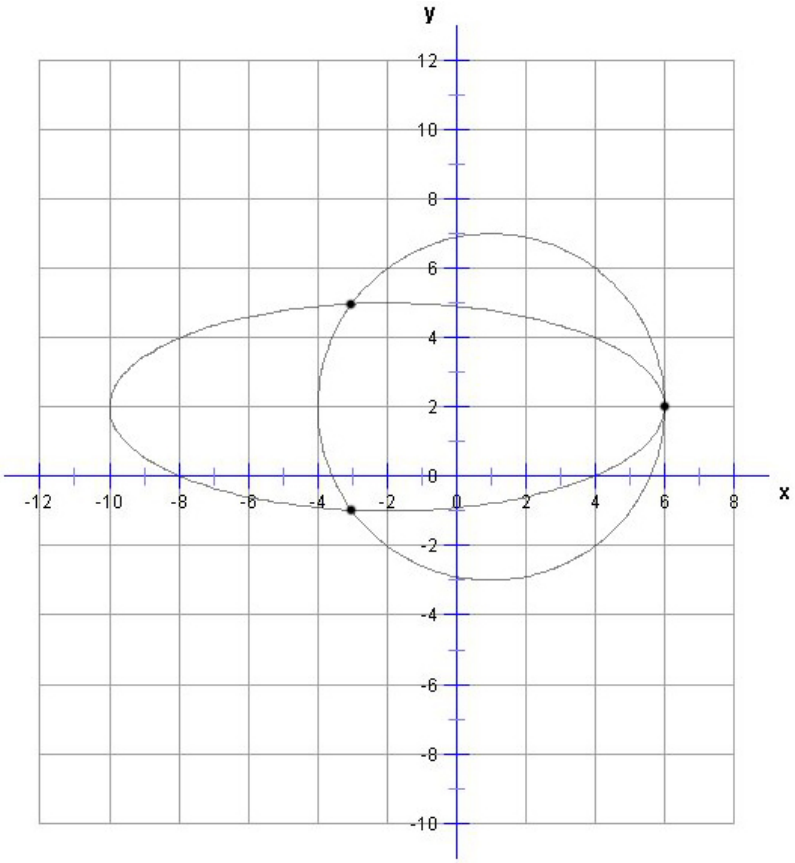
16) Hyperbola $\dfrac{(y+7)^2}{25}-\dfrac{(x-5)^2}{64}=1$

17) $x=1.1, y=6.2$ $x=-7.1, y=6.2$



18) Hyperbola $\dfrac{(x+6)^2}{121}-\dfrac{(y-8)^2}{81}=1$

19) $x=6.0, y=2.0$ $x=-3.0, y=5.0$ $x=-3.0, y=-1.0$



20) Hyperbola $\frac{(x-2)^2}{16}-\frac{(y-4)^2}{9}=1$