Homework #75   **Answers**
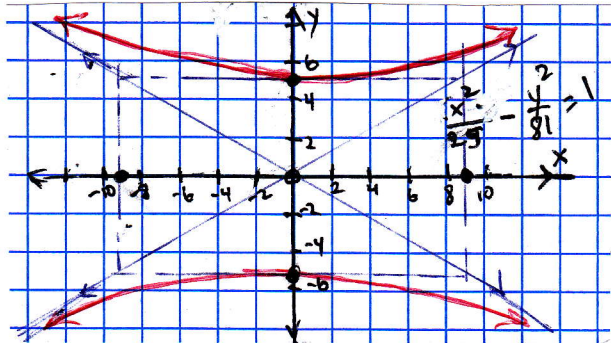
From Houghton-Mifflin Precalculus   **3ʳᵈ Edition**

p720:

9) $\dfrac{y^2}{25} - \dfrac{x^2}{81} = 1$

center: (0, 0), vertical, a = 5, b = 9,

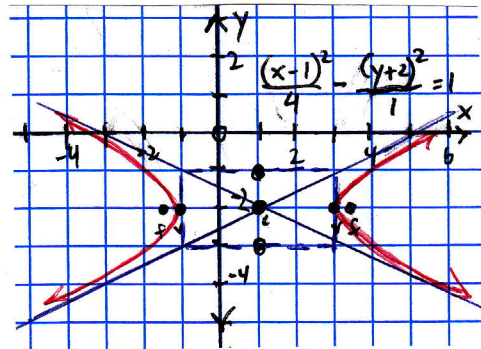$c^2 = 25 + 81 = 106$, c = $\sqrt{106}$,

vertices: (0, -5), (0, 5),

foci: (0, -$\sqrt{106}$), (0, $\sqrt{106}$),

asymptotes: y = ±(5/9)x

11) $\dfrac{(x - 1)^2}{4} - \dfrac{(y + 2)^2}{1} = 1$

center: (1, -2), horizontal, a = 2, b = 1,

$c^2 = 4 + 1 = 5$, c = $\sqrt{5}$,

vertices: (-1, -2), (3, -2),

foci: (1 - $\sqrt{5}$, -2), (1 + $\sqrt{5}$, -2),

asymptotes: y = -2 ± ½(x - 1)

23) vertices: (0, -2), (0, 2), foci: (0, -4), (0, 4):   center: (0, 0), vertical,

a = 2, c = 4, 16 = 4 + b^2, b^2 = 12,   equation: $\dfrac{y^2}{4} - \dfrac{x^2}{12} = 1$

29) vertices: (2,0), (6, 0), foci: (0, 0), (8, 0):   center: (4, 0), horizontal,

a = 2, c = 4, 16 = 4 + b^2, b^2 = 12,   equation: $\dfrac{(x - 4)^2}{4} - \dfrac{y^2}{12} = 1$

31) vertices: (4, 1), (4, 9), foci: (4, 0), (4, 10):   center: (4, 5), vertical,

a = 4, c = 5, 25 = 16 + b^2, b^2 = 9,   equation: $\dfrac{(y - 5)^2}{16} - \dfrac{(x - 4)^2}{9} = 1$

p195:

17) $f(x) = \dfrac{2x^3}{x^2 - 1}$ domain: set of all real numbers, x ≠ -1, 1

   vertical asymptote: x = -1, x = 1

   horizontal asymptote: none   slant asymptote: y = 2x

18) $f(x) = \dfrac{3x^2 + 1}{x^2 + x + 9}$ domain: set of all real numbers

   vertical asymptote: none   horizontal asymptote: y = 0