Answer Key
9.5 – Hyperbolas Rev 2013

1) $\frac{(x-h)^2}{a^2}-\frac{(y-k)^2}{b^2}=1$

2) $\frac{(y-k)^2}{a^2}-\frac{(x-h)^2}{b^2}=1$

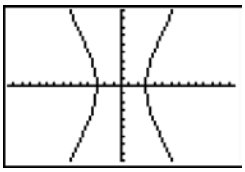
3) $a^2+b^2=c^2$

4) $y-k=\pm\frac{b}{a}(x-h)$

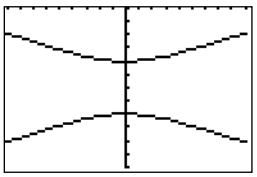
5) $y-k=\pm\frac{a}{b}(x-h)$

6) $L=2a; L=2b$

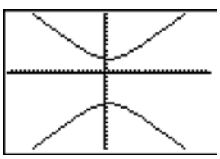
7) Horizontal, C: (0, 0); V: $(\pm 3,0)$; CV: $(0,\pm 5)$, F: $(\pm\sqrt{34},0)$; TA: 6, CA: 10 ; Asy: $y=\pm\frac{5}{3}x$; LR : 50/3, Ecc : $\frac{\sqrt{34}}{3}$



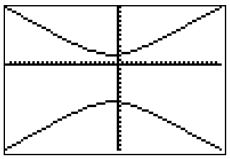
8) Vertical; C: (0, –7), V: (0, –5)&(0, –9), CV: (5, –7) & (–5, –7), F: $(0,-7\pm\sqrt{29})$; TA: 4, CA: 10; Asy: $y+7=\pm\frac{2}{5}x$; LR: 25/2; Ecc: $\frac{\sqrt{29}}{2}$



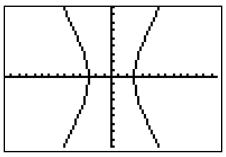
9) Vertical; C: (–2, –1), V: (–2, 6)&(–2, –4), CV: (–8, 1) & (4, 1), F: $(-2,-1\pm\sqrt{61})$; TA: 10, CA: 12; Asy: $y-1=\pm\frac{5}{6}(x+2)$; LR: 72/5; Ecc: $\frac{\sqrt{61}}{5}$



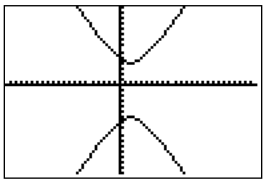
10) Vertical; C: (–1, –3); V: $(-1,2)\&(-1,-8)$; CV: $(7,-3)\&(-9,-3)$; Foci: $(-1,-3\pm\sqrt{89})$; TA: 10 ; CA : 16 ; Asy: $y+3=\pm\frac{5}{8}(x+1)$; LR: 128/5 ; Ecc.: $\frac{\sqrt{89}}{5}$



11) Hori; C: (0, 0), V: $(\pm 3,0)$, CV: $(0,\pm 5)$, F: $(\pm\sqrt{34},0)$; TA: 6, CA: 10; Asy: $y=\pm\frac{5}{3}x$; LR : 50/3, Ecc.: $\frac{\sqrt{34}}{3}$



12. Vertical; C: (2, –1); V: $(2,4)\&(2,-6)$; CV : $(2\pm 2\sqrt{3},-1)$; F: $(2,-1\pm\sqrt{37})$; TA: 10 ; CA: $4\sqrt{3}$; Asy : $y+1=\pm\frac{5\sqrt{3}}{6}(x-2)$; LR: 24/5, Ecc. : $\frac{\sqrt{37}}{5}$



13) D = 14

14) D = 16

15) $\frac{(y-5)^2}{16}-\frac{(x-4)^2}{9}=1$

16) $\frac{x^2}{225}-\frac{y^2}{169}=1$

17) $\frac{(y+1)^2}{4}-\frac{(x-6)^2}{21}=1$

18) $\frac{x^2}{36}-\frac{y^2}{16}=1$

19) $\frac{(x+1)^2}{4}-\frac{(y-3)^2}{9}=1$

20) $\frac{(x+3)^2}{49}-\frac{(y+2)^2}{36}=1$

21) $\frac{(y-4)^2}{16}-\frac{(x+7)^2}{25}=1$

22) C

23) B

24) A

25) D