

**Advanced Precalculus**  
**Unit 1 Review Key**

Name: \_\_\_\_\_

**Absolute Value Equations**

- 4.)  $x=17$  or  $x=\frac{13}{11}$       5.)  $x=\frac{12}{7}$  or  $x=-\frac{8}{5}$   
6.)  $x=-1+\sqrt{3}$  ,  $x=-1-\sqrt{3}$  ,  $x=3+\sqrt{13}$  , or  $x=0$

**Function Basics**

- 4.) Domain of  $f$ :  $[-7, 1) \cup (1, 5]$   
Range of  $f$ :  $[-1, 4]$   
 $(f \circ g)(3) = f(0) = 3$      $(g \circ f)(-7) = g(4) = -1$   
5.) (Check what you drew.)      6.) (Check what you drew.)

**Functions**

- 4.) Rx, VSTR 3, Left 5, Up 2086      5.) Rx, VSHR 2/5, Ry, HSTR 4/3, Right 2/3, Down 3/5  
6.)  $\left(-\frac{15}{28}, -3\right)$

**Lines**

- 4.)  $y=-\frac{3}{4}x+\frac{51}{8}$  ,  $y=\frac{3}{2}x-\frac{29}{4}$  ,  $y=-3x+20$  ; Circumcenter  $\left(\frac{109}{18}, \frac{11}{6}\right)$   
5.)  $y=-\frac{3}{4}x+\frac{39}{4}$  ,  $y=\frac{3}{2}x-\frac{7}{2}$  ,  $y=-3x+23$  ; Orthocenter  $\left(\frac{53}{9}, \frac{16}{3}\right)$   
6.)  $y=\frac{2}{3}x-1$  ,  $y=3$  ,  $x=6$  ; Centroid  $(6, 3)$

**Parabolas**

- 4.)  $y=\frac{(x-5)^2}{12}+5$       5.)  $y=-\frac{(x+6)^2}{12}-7$       6.)  $x=\frac{(y-3)^2}{20}-7$

**Circles**

- 5.)  $(-1, 8)$  ;  $r=5\sqrt{2}$       6.)  $(2, -4)$      $r=\frac{7}{4}$

**Ellipses**

- 3.)  $\frac{(x+2)^2}{12}+\frac{(y-5)^2}{16}=1$       4.)  $\frac{(x-5)^2}{16}+\frac{(y-4)^2}{9}=1$   
5.) Endpoints:  $(1, 3)$ ,  $(-2, -5)$ ,  $(1, -13)$ ,  $(4, -5)$ ; Focal Points:  $(1, -5+\sqrt{55})$  ,  $(1, -5-\sqrt{55})$   
Center Point:  $(1, -5)$   
6.) Endpoints:  $(-3+2\sqrt{2}, 1)$  ,  $(-3-2\sqrt{2}, 1)$  ,  $(-3, 1+\sqrt{6})$  ,  $(-3, 1-\sqrt{6})$   
Focal Points:  $(-3+\sqrt{2}, 1)$  ,  $(-3-\sqrt{2}, 1)$   
Center Point:  $(-3, 1)$

**Hyperbolas**

- 3.)  $(y-5)^2-\frac{(x+2)^2}{3}=1$       4.)  $\frac{(x+1)^2}{4}-\frac{(y+5)^2}{5}=1$   
5.) Vertex Points:  $(-4, -2)$ ,  $(2, -2)$       Focal Points:  $(-1-\sqrt{10}, -2)$  ,  $(-1+\sqrt{10}, -2)$   
Center Point:  $(-1, -2)$ ;      Asymptotes:  $y=\frac{1}{9}x+\frac{19}{9}$  ,  $y=-\frac{1}{9}x+\frac{17}{9}$   
6.) Vertex Points:  $(1, 9)$ ,  $(1, -5)$       Focal Points:  $(1, 2+\sqrt{85})$  ,  $(1, 2-\sqrt{85})$   
Center Point:  $(1, 2)$ ;      Asymptotes:  $y=\frac{6}{7}x+\frac{8}{7}$  ,  $y=-\frac{6}{7}x+\frac{20}{7}$

**Miscellaneous**

- 6.) Parabola:  $A=0$  or  $B=0$ ;    Circle:  $A=B$ ;    Ellipse:  $A$  and  $B$  are both positive or both negative  
Hyperbolas:  $A$  and  $B$  are such that one is positive and one is negative.