

PC Sec 3-1 p. 156 (1-21)

- ① Linear, cubic, inverse
- ② Linear, cubic
- ③ Quadratic, inverse square, absolute value
- ④  $y = -5$
- ⑤ D:  $\{x \mid x \in \mathbb{R}\}$  R:  $\{y \mid y \geq 12\}$
- ⑥ a) on calc  
b) All have vertex at (0,0)  
f(x) - vertical stretch by factor of 3  
g(x) - vertical shrink by factor of 0.5  
h(x) - reflect over x-axis
- ⑦  $y = \sqrt{x} \rightarrow y = \sqrt{x-5} \rightarrow$  Translation right 5
- ⑧  $y = |x| \rightarrow y = |4x| \rightarrow$  Horizontal shrink by  $\frac{1}{4}$
- ⑨  $-10 \leq x \leq 10$  ;  $-10 \leq y \leq 10$
- ⑩ a) on calc  
b) ii - Shows all features without distorting them
- ⑪ a) on calc  
b)  $f(x) \rightarrow x=0$  ;  $g(x) \rightarrow x=-6$  ;  $h(x) \rightarrow x=0$   
c)  $x=0$  ;  $x=-6$  ;  $x=0$   
d)  $g(x) \rightarrow$  translate left 6  
 $h(x) \rightarrow$  translate up 10
- ⑫ a)  $-2 \leq x \leq 2$  ;  $-2 \leq y \leq 2$  (VART)  
b)  $2 \leq x \leq 10$  ;  $-10 \leq y \leq 10$  (VART)
- ⑬ a)  $x^2 + 30x + 200 \geq 0$   
 $(x+10)(x+20)$   
 $x \geq -10$  ;  $x \leq -20$   
D:  $\{x \mid x \leq -20 \text{ or } x \geq -10\}$   
b)  $-30 \leq x \leq 10$  (VART)  
 $-5 \leq y \leq 30$
- ⑭  $\{x \mid 4 \leq x \leq 40\}$  (VART)
- ⑮ a) on calc b) True

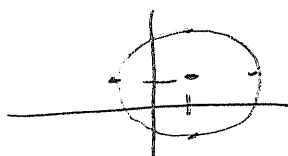
$\rightarrow \begin{cases} x^2 > 0 \text{ when } x \neq 0, |x| < 4, \\ \frac{1}{x^2} < \frac{4}{x^2} \end{cases} \Rightarrow f(x) < g(x) \text{ when } x \neq 0.$   
 c) All  $y$  values of  $g(x)$  are greater than those of  $f(x)$  on the graph.

- 16) a)  $\{t \mid t \in \mathbb{R}\}$   
 b)  $\{r \mid r > 0\}$   
 c)  $r = 0$

17) Not a function

18) Function

21)  $C: (1, 1) \quad r = 2$



19) Function

20) a)  $\frac{\frac{1}{t} \cdot \frac{6}{t}}{\frac{1}{t}} = \boxed{6}$       b)  $\frac{\frac{1}{t} \cdot \frac{h}{t}}{\frac{1}{h}} = \boxed{h}$

c)  $\left(\frac{1}{h}\right)^{-1} = \frac{1}{\frac{1}{h}} = h = \boxed{h}$