

Ans Key

Make-up T1 + T2

Spring 2005

① 5pt a) ~~TR~~ $\{3\}$

5pt b) $(f \circ g)(x) = \frac{1}{(\sqrt{x-8})^2} = \frac{1}{x-8}$

5pt c) $\text{Dom } f \circ g : x > 8$

10pts
②

$$\frac{f(x+h) - f(x)}{h} = \frac{[(x+h)^2 - (x+h)] - [x^2 - x]}{h}$$

$$= \frac{x^2 + 2xh + h^2 - x - h - x^2 + x}{h} = \frac{2xh + h^2 - h}{h}$$

$$= \frac{h(2x + h - 1)}{h} = \boxed{2x + h - 1}$$

15pts
③

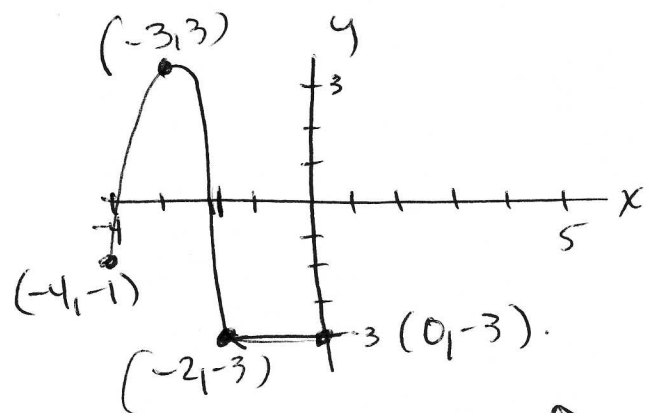
3pts a) Domain: $[-3, 1]$

3pt b) Range: $[0, 3]$

3pt c) $f(1) = 0$

3pts d) $(-2, -1)$

3pts e) $(-3, 1) \rightarrow (-4, 1) \rightarrow (-4, 2) \rightarrow (-4, -1)$
 $(-2, 3) \rightarrow (-3, 3) \rightarrow (-3, 6) \rightarrow (-3, 3)$
 $(-1, 0) \rightarrow (-2, 0) \rightarrow (-2, 0) \rightarrow (-2, -3)$
 $(1, 0) \rightarrow (0, 0) \rightarrow (0, 0) \rightarrow (0, -3)$



stretch $\uparrow 2$ down 3 \uparrow