

# HW28

p240 #1, 2, 6, 9, 10 a-c, 13 a-c

## Function Composition

$$1. \quad a) \quad f(4) = 3 + \sqrt{4+5} \Rightarrow b) \quad f(g(4)) \Rightarrow$$

$$= 3 + \sqrt{9} \qquad g(4) = 2 + (4-1)^2$$

$$= 3 + 3 = \boxed{6} \qquad = 2 + 9 = 11$$

$$c) \quad g(-1) = 2 + (-1-1)^2$$

$$= 2 + 4 = \boxed{6}$$

$$f(11) = 3 + \sqrt{11+5}$$

$$= 3 + \sqrt{16}$$

$$= 3 + 4 = \boxed{7}$$

$$d) \quad g(f(-1)) \Rightarrow f(-1) = 3 + \sqrt{-1+5} = 5$$

$$g(5) = 2 + (5-1)^2 = 2 + 16 = \boxed{18}$$

$$10. \quad a) \quad f(g(3)) \rightarrow g(3) = 1$$

$$f(1) = \boxed{4}$$

$$b) \quad f(g(2)) \rightarrow g(2) = 0$$

$$f(0) = \boxed{3}$$

$$c) \quad g(f(0.5)) \rightarrow f(0.5) = 3.75$$

$$g(3.75) = \boxed{3.0625}$$

$$2. \quad a) \quad g(f(4)) = g(1) = 2$$

$$b) \quad f(g(-2)) = f(4) = 1$$

$$c) \quad f(g(f(3))) = f(g(5)) = f(5) = 0$$

$$6. \quad a) \quad g(f(2)) = g(1) = 2$$

$$b) \quad f(g(6)) = f(-2) = 6$$

$$c) \quad \text{you get } \text{or your original } \#.$$

$$9. \quad a) \quad g(f(2)) \rightarrow f(2) = 3$$

$$g(3) = 2$$

$$b) \quad f(g(-1)) = f(0) = -1$$

$$c) \quad g(f(4)) = g(7) = 4.$$

$$d) \quad f(g(-3)) = f(-1) = -3$$

$$e) \quad \text{whatever } x \text{ you first plugged}$$

$$\text{in you get back}$$

$$13. \quad a) \quad \sqrt{|x-4|} = 3$$

$$|x-4| = 9$$

$$x-4 = 9 \qquad x-4 = -9$$

$$\boxed{x = 13}$$

$$\boxed{x = -5}$$

$$b) \quad (3 - \sqrt{x+2})^2 = 4$$

$$3 - \sqrt{x+2} = 2$$

$$-\sqrt{x+2} = -1$$

$$\sqrt{x+2} = 1$$

$$x+2 = 1$$

$$\boxed{x = -1}$$

$$c) \quad |3 - \sqrt{x}| = 5$$

$$3 - \sqrt{x} = 5 \qquad 3 - \sqrt{x} = -5$$

$$-\sqrt{x} = 2 \qquad -\sqrt{x} = -8$$

$$\boxed{NP}$$

$$\sqrt{x} = 8$$

$$\boxed{x = 64}$$