

pg. 117 (11, 12, 13, 15, 17, 19, 20)

9/1/16

$$11. (f \circ g)(3) = 2(\quad) - 3$$

$$= 2(x+1) - 3$$

$$= 2(3+1) - 3 = 2(4) - 3 = \boxed{5}$$

$$(g \circ f)(-2) = (\quad) + 1$$

$$= (2x-3) + 1$$

$$= (2(-2) - 3) + 1 = (-4-3) + 1 = \boxed{-6}$$

$$12. (f \circ g)(3) = (\quad)^2 - 1 = (2x-3)^2 - 1 = (2(3)-3)^2 - 1$$

$$= (6-3)^2 - 1 = 3^2 - 1 = \boxed{8}$$

$$(g \circ f)(-2) = 2(\quad) - 3 = 2(x^2-1) - 3 = 2((-2)^2-1) - 3$$

$$= 2(3) - 3 = \boxed{3}$$

$$13. \quad g(3) = \sqrt{3+1} = \sqrt{4} = 2$$

$$(f \circ g)(3) = (2)^2 + 4 = \boxed{8}$$

$$f(-2) = (-2)^2 + 4 = 8$$

$$(g \circ f)(-2) = \sqrt{8+1} = \sqrt{9} = \boxed{3}$$

$$15. \quad f(x) = 3x + 2 \quad g(x) = x - 1$$

$$f(g(x)) = 3(\quad) + 2$$

$$= 3(x-1) + 2 = 3x - 3 + 2 = \boxed{3x - 1} \quad D: (-\infty, \infty)$$

$$g(f(x)) = (\quad) - 1$$

$$= (3x + 2) - 1 = \boxed{3x + 1} \quad D: (-\infty, \infty)$$

$$17. \quad f(x) = x^2 - 2 \quad g(x) = \sqrt{x+1}$$

$$f(g(x)) = (\quad)^2 - 2$$

$$= (\sqrt{x+1})^2 - 2 = x + 1 - 2 = \boxed{x - 1} \quad D: (-\infty, \infty)$$

$$g(f(x)) = \sqrt{(\quad) + 1}$$

$$= \sqrt{(x^2 - 2) + 1} = \boxed{\sqrt{x^2 - 1}} \quad D: (-\infty, -1] \cup [1, \infty)$$

$$19. \quad f(x) = x^2 \quad g(x) = \sqrt{1-x^2}$$

$$f(g(x)) = (\quad)^2$$

$$= (\sqrt{1-x^2})^2 = \boxed{1-x^2} \quad D: (-\infty, \infty)$$

$$g(f(x)) = \sqrt{1-(\quad)^2}$$

$$= \sqrt{1-(x^2)^2} = \boxed{\sqrt{1-x^4}} \quad D: [-1, 1]$$

$$20. \quad f(g(x)) = (\sqrt[3]{1-x^3})^3 = \boxed{1-x^3} \quad D: (-\infty, \infty)$$

$$g(f(x)) = \sqrt[3]{1-(x^3)^3} = \boxed{\sqrt[3]{1-x^9}} \quad D: (-\infty, \infty)$$