

**DIRECTIONS:** Find a real-number value or an expression in  $x$  for each of the following. If no real value can be found, say so.

$$f(x) = \frac{x}{2} ; g(x) = x - 3 ; h(x) = \sqrt{x}$$

1.  $f(g(8))$   
 $\frac{5}{2}$

2.  $f(g(-5))$   
 $-4$

3.  $f(g(0))$   
 $-\frac{3}{2}$

4.  $f(g(x))$   
 $\frac{x-3}{2}$

5.  $g(f(8))$   
 $1$

6.  $g(f(-5))$   
 $-\frac{11}{2}$

7.  $g(f(0))$   
 $-3$

8.  $g(f(x))$   
 $\frac{x}{2} - 3$

9.  $f(h(9))$   
 $\frac{3}{2}$

10.  $f(h(4))$   
 $1$

11.  $f(h(-4))$   
Not real

12.  $f(h(x))$   
 $\frac{\sqrt{x}}{2}$

13.  $h(f(32))$   
 $4$

14.  $h(f(16))$   
 $2\sqrt{2}$

15.  $h(f(x))$   
 $\frac{\sqrt{2x}}{2}$

16.  $f(f(x))$   
 $\frac{x}{4}$

17.  $h(g(12))$   
 $3$

18.  $h(g(2))$   
Not real

19.  $h(g(x))$   
 $\sqrt{x-3}$

20.  $h(h(x))$   
 $\sqrt[4]{x}$

21.  $g(h(9))$   
 $0$

22.  $g(h(\sqrt{3}))$   
 $\sqrt[4]{3} - 3$

23.  $g(h(x))$   
 $\sqrt{x} - 3$

24.  $g(g(x))$   
 $x - 6$