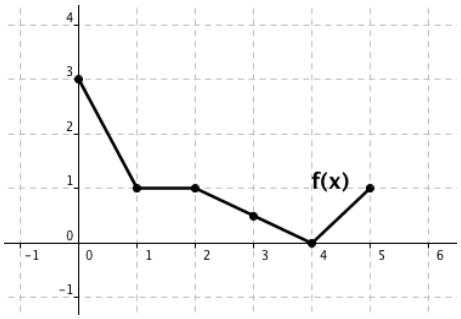
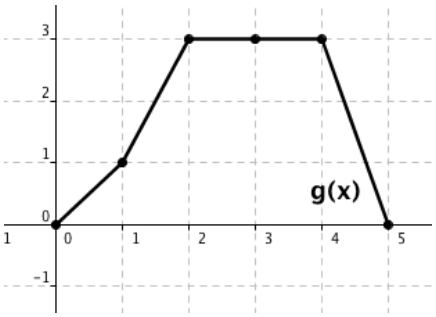
# Function Compositions WKST

1. Use the graphs of *f* and *g* to find each value.



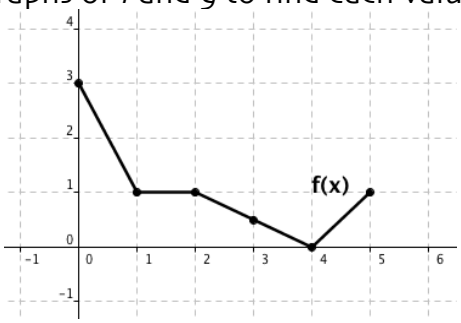

a. $(f+g)(3)$ b. $(f-g)(2)$ c. $(fg)(4)$ d. $\left(\frac{g}{f}\right)(4)$ e. $\left(\frac{f}{g}\right)(2)$

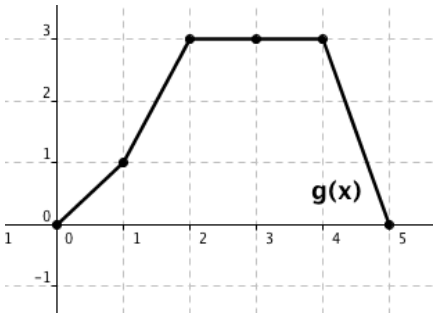
2. Perform the indicated operation. Do not rationalize the denominator.

| | | | |
|---|---|---|---|
| $f(x)=6x^2-x-1$ | $g(x)=x-6$ | $m(x)=8x^{5/3}$ | $r(x)=\sqrt{x}$ |

a. $f(x)+g(x)$ b. $g(x)-f(x)$ c. $(h\cdot m)(x)$ d. $\frac{g(x)}{r(x)}$

3. Use the graphs of *f* and *g* to find each value.




a. $-2(f\circ g)(1)$ b. $(g\circ f)(5)$ c. $(f\circ g\circ f)(4)$

4. Find the value of each expression, if possible.

| | | |
|---|---|---|
| $f(x)=4x^{2/3}$ | $g(x)=8x^{1/2}$ | $m(x)=-x^2$ |

a. $(f\circ g)(27)$ b. $(m\circ g)(-4)$ c. $(f\circ m)(8)$

5. Find each composition.

$f(x)=\sqrt{x-7}$ $g(x)=x^2+7$ $m(x)=\frac{1}{x}$ $n(x)=4x^2-20x+16$ $q(x)=x+4$

a. $(g\circ f)(x)$ b. $(g\circ q)(x)$ c. $(m\circ g)(x)$ d. $(m\circ f)(x)$ e. $(n\circ q)(x)$

## ANSWERS

1.

a) 3.5 b) -2 c) 0 d) undefined e) 1/3

2.

a) $6x^2 - 7$

b) $-6x^2 - 2x - 5$

c) $8x^{\frac{2}{3}}$

d) $\frac{x-6}{\sqrt{x}}$

3.

a. -2

b. 1

c. 3

4.

a. 48

b. undefined

c. 64

5.

a. $x$

b. $x^2 + 8x + 23$

c. $\frac{1}{x^2+7}$

d. $\frac{\sqrt{x-7}}{x-7}$

e. $4x^2 + 12x$