

Forming Composite Functions:

1. If $f(x) = 3x + 1$ and $g(x) = 2x - 5$ find the following composite functions in their simplest form:

a) $fg(x) =$

c) $ff(x) =$

b) $gf(x) =$

d) $gg(x) =$

2. If $f(x) = 3x + 1$ and $g(x) = 2x + 1$ find the following composite functions in their simplest form:

a) $fg(x) =$

c) $ff(x) =$

b) $gf(x) =$

d) $gg(x) =$

3. If $f(x) = 3x + 2$ and $g(x) = 2x + 3$ find the following composite functions in their simplest form:

a) $fg(x) =$

c) $ff(x) =$

b) $gf(x) =$

d) $gg(x) =$

4. If $f(x) = 3x + 2$ and $g(x) = x^2$ find the following composite functions in their simplest form:

a) $fg(x) =$

c) $ff(x) =$

b) $gf(x) =$

d) $gg(x) =$

5. If $f(x) = 2 - 3x$, $g(x) = x^2$ and $h(x) = \frac{2}{x}$, find the following composite functions in their simplest form:

a) $fg(x) =$

g) $fh(x) =$

b) $gf(x) =$

h) $ff(x) =$

c) $gh(x) =$

i) $ffg(x) =$

d) $gg(x) =$

j) $fgh(x) =$

e) $hg(x) =$

k) $ghf(x) =$

f) $hh(x) =$

ANSWERS

1.

a) $fg(x) = 6x - 14$

b) $gf(x) = 6x - 3$

c) $ff(x) = 9x + 4$

d) $gg(x) = 4x - 15$

2.

a) $fg(x) = 6x + 4$

b) $gf(x) = 6x + 3$

c) $ff(x) = 9x + 4$

d) $gg(x) = 4x + 3$

3.

a) $fg(x) = 6x + 11$

b) $gf(x) = 6x + 7$

c) $ff(x) = 9x + 8$

d) $gg(x) = 4x + 9$

4.

a) $fg(x) = 3x^2 + 2$

b) $gf(x) = (3x + 2)^2$ or $9x^2 + 12x + 4$

c) $ff(x) = 9x + 8$

d) $gg(x) = x^4$

5.

a) $fg(x) = 2 - 3x^2$

b) $gf(x) = (2 - 3x)^2$ or $9x^2 - 12x + 4$

c) $gh(x) = \left(\frac{2}{x}\right)^2$ or $\frac{4}{x^2}$

d) $gg(x) = x^4$

e) $hg(x) = \frac{2}{x^2}$

f) $hh(x) = x$

g) $fh(x) = 2 - \frac{6}{x}$

h) $ff(x) = 9x - 4$

i) $ffg(x) = 9x^2 - 4$

j) $fgh(x) = 2 - \frac{12}{x^2}$

k) $ghf(x) = \frac{4}{(2-3x)^4}$