

# Function Composition Handout - ANSWERS

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**Instructions.** In the following problems,  $f(x) = x^2 - 3x + 4$ ;  $g(x) = \sin(x)$ ;  $h(x) = \frac{1}{3x-2}$

1.  $f(g(x)) = \sin^2(x) - 3\sin(x) + 4$

2.  $f(h(x)) = \left(\frac{1}{3x-2}\right)^2 - \frac{3}{3x-2} + 4$

3.  $f(f(x)) = (x^2 - 3x + 4)^2 - 3(x^2 - 3x + 4) + 4$

4.  $g(f(x)) = \sin(x^2 - 3x + 4)$

5.  $g(h(x)) = \sin\left(\frac{1}{3x-2}\right)$

6.  $g(g(x)) = \sin(\sin(x))$

7.  $h(f(x)) = \frac{1}{3(x^2-3x+4)-2}$

8.  $h(g(x)) = \frac{1}{3\sin(x)-2}$

9.  $h(h(x)) = \frac{1}{\frac{3}{3x-2}-2}$