

Math 111 Supplemental HW on Composite Functions

Name: _____

1. Suppose that $f(x) = 2x^2 - 3$ and $g(x) = 3x + 2$. Find $(f \circ g)(x)$ and $(g \circ f)(x)$.

2. Suppose that $f(x) = \frac{1}{x+3}$ and $g(x) = \frac{3}{2x+2}$. Find $(f \circ g)(x)$ and $(f \circ f)(x)$ and state the domain of each.

3. The surface area S (in square meters) of a hot-air balloon is given by

$$S(r) = 4\pi r^2$$

where r is the radius of the balloon (in meters). If the radius r is increasing with time t (in seconds) according to the formula $r(t) = \frac{2}{3}t^3$, $t \geq 0$, find the surface area S of the balloon as a function of the time t .