

Section 1.6

$$\begin{aligned} 1) f(g(x)) &= \frac{1}{\left(\frac{1}{x}\right)} = x & 2) f(g(x)) &= 9 - (\sqrt{9-x})^2 = 9 - 9 + x = x \\ g(f(x)) &= \frac{1}{\frac{1}{x}} = x & g(f(x)) &= \sqrt{9 - (9-x^2)} = \sqrt{x^2} = x \\ 3) f(g(x)) &= \frac{1}{1 + \left(\frac{1-x}{x}\right)} = \frac{1}{\frac{x+1-x}{x}} = \frac{1}{\frac{1}{x}} = x \\ g(f(x)) &= \frac{1 - \left(\frac{1}{1+x}\right)}{\frac{1}{1+x}} = \frac{\frac{1+x-1}{1+x}}{\frac{1}{1+x}} = \frac{x}{1+x} \cdot \frac{1+x}{1} = x \end{aligned}$$

4) NO 5) NO 6) NO 8) NO 9) YES