Composite Functions

Question 1. If $f(x) = 2x + 3$ and $g(x) = x^2$, find $f(g(2))$

[3 marks]

Question 2. If $f(x) = x - 5$ and $g(x) = 4x$, find $g(f(3))$

[3 marks]

Question 3. Given $f(x) = 3x$ and $g(x) = x + 2$, find $f(g(4))$

[3 marks]

Question 4. If $f(x) = x^2 + 1$ and $g(x) = \sqrt{x}$, find $f(g(9))$

[3 marks]

Question 5. Let $f(x) = 5 - x$ and $g(x) = 2x + 1$. Find $g(f(4))$

[3 marks]

Question 6. Given $f(x) = x^2$ and $g(x) = 2x - 1$, find $f(g(3))$

[3 marks]

Question 7. If $f(x) = 3x - 1$ and $g(x) = x^2$, find an expression for $f(g(x))$

[3 marks]

Question 8. Let $f(x) = \sqrt{x}$ and $g(x) = 3x + 2$. Find an expression for $f(g(x))$

[3 marks]

Question 9. Given $f(x) = \dfrac{1}{x}$ and $g(x) = x + 4$, find an expression for $f(g(x))$

[3 marks]

Question 10. If $f(x) = 2x + 1$ and $g(x) = \dfrac{x}{x+1}$, find $f(g(x))$

[3 marks]

Question 11. Given $f(x) = 3x - 4$, find $f^{-1}(x)$ and hence solve $f(f^{-1}(x))$

[3 marks]

Question 12. If $f(x) = x^2$ and $g(x) = x + 1$, find $f(g(x))$ and $g(f(x))$

[3 marks]

Question 13. Given $f(x) = \dfrac{2}{x}$ and $g(x) = x^2 - 1$, find $f(g(x))$

[3 marks]

Question 14. Let $f(x) = x + 2$, $g(x) = 3x$, and $h(x) = x^2$. Find $f(g(h(2)))$

[3 marks]

Question 15. If $f(x) = \dfrac{1}{x+1}$ and $g(x) = x^2$, find and simplify $f(g(x))$

[3 marks]

Question 16. A function f is defined as $f(x) = 2x - 3$. Given $f(g(x)) = 4x + 1$, find $g(x)$

[3 marks]

Question 17. Let $f(x) = 3x + 2$. If $f(g(x)) = 6x + 7$, find $g(x)$

[3 marks]

Question 18. If $f(x) = 2x + 5$, find a function g such that $f(g(x)) = x$

[3 marks]

Question 19. The functions $f(x) = x^2$ and $g(x) = 2x + 1$ are given. Is $f(g(x)) = g(f(x))$? Justify your answer.

[3 marks]

Question 20. A composite function $h(x) = f(g(x))$ is defined. Given $f(x) = 3x - 1$, and $h(x) = 6x + 5$, find $g(x)$

[3 marks]
