

Work on as many problems as you can together with your group members. Towards the end of lecture your group will be asked to present problems correctly to receive classwork points.

1. Find $f(g(x))$ and $g(f(x))$ and determine whether f and g are inverses.

(a) $f(x) = 8x - 9, g(x) = \frac{x+9}{8}$

(b) $f(x) = 9x - 5, g(x) = \frac{x+9}{5}$

(c) $f(x) = 7x - 6, g(x) = \frac{x+6}{7}$

(d) $f(x) = 6x - 7, g(x) = \frac{x+7}{6}$

(e) $f(x) = 9x + 5, g(x) = \frac{x+9}{5}$

2. Find an equation for the inverse function.

(a) $f(x) = x^3 + 4$

(b) $h(x) = (x+3)^5$

(c) $f(x) = \frac{13}{x}$

(d) $f(x) = \frac{x^3 - 1}{4}$

(e) $f(x) = x^{1/4}$

3. Find $(f \circ g)^{-1}(x)$ and $g^{-1}(f^{-1}(x))$.

(a) If $f(x) = 9x, g(x) = x + 6$

(b) If $f(x) = 4x, g(x) = x - 5$

(c) If $f(x) = 3x, g(x) = 2x + 1$

(d) If $f(x) = 5x, g(x) = 3x + 4$

(e) If $f(x) = 8x, g(x) = x - 6$

4. Given the function $f(x)$, find its inverse $f^{-1}(x)$, then graph f and f^{-1} on the same rectangular coordinate system. Lastly, Use interval notation to give the domain and the range of f and f^{-1} .

(a) $f(x) = (x-2)^2 - 1, x \geq 2$

(b) $f(x) = x^2 - 3, x \geq 0$

(c) $f(x) = (x+2)^2 + 1, x \geq -2$

(d) $f(x) = (x-3)^2 + 1, x \geq 3$

(e) $f(x) = (x-3)^2, x \leq 3$

5. Use the graph below to draw a graph of its inverse function.

