

Universidad de Puerto Rico
Departamento de Matemáticas
MATE 3018 – Repaso 4–

Apellidos: _____ Nombre _____
No. Estudiante: _____ Profesor: _____ Sección _____

(1) Let f and g be two functions defined on \mathbb{R} by $f(x) = x^3 - 3x^2 + 4$ and $g(x) = x^2 - 7x + 2$. Evaluate

(a) $f(3) =$

(b) $g(-2) =$

(c) $f(x + 3) =$

(d) $g(2x - 3) =$

(e) $(f \circ g)(-3) =$

(f) $(g \circ f)(2) =$

(g) $\frac{f(x + h) - f(x)}{h} =$

(h) $\frac{g(x + h) - g(x)}{h} =$

(i) $\frac{f(x) - f(3)}{x - 3} =$

(j) $\frac{g(x) - g(-4)}{x + 4} =$

(2) Find the domain of each of the following functions.

(a) $f(x) = \frac{x+2}{x^2-9}$

(b) $g(x) = \frac{x+7}{x^3-8}$

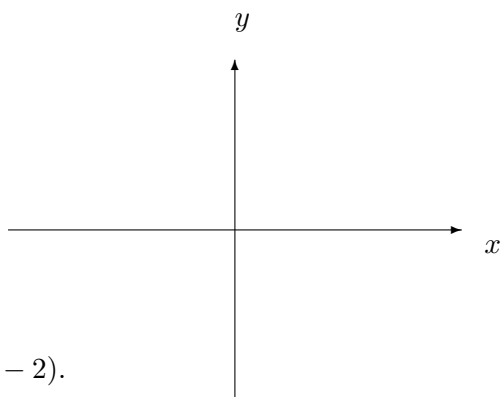
(c) $h(x) = \sqrt{16-x^2}$

(d) $j(x) = \sqrt{3x+5}$

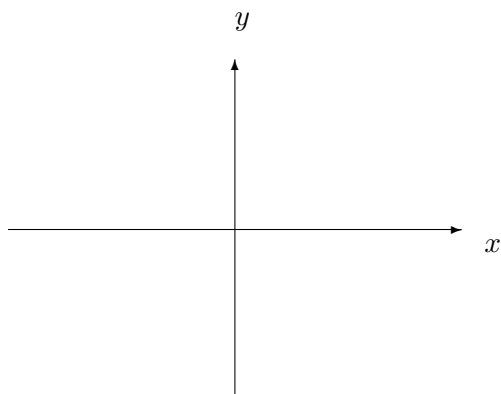
(e) $k(x) = |3x+4|$.

(3) Graph the following functions in the same coordinates system.

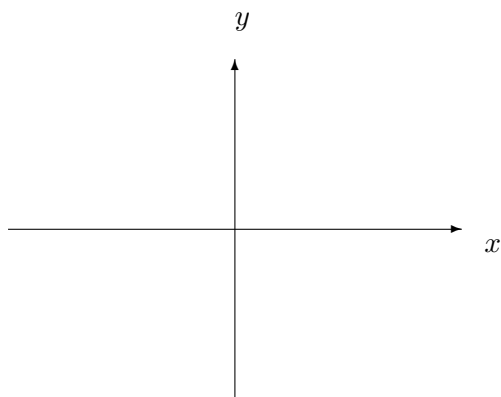
(a) $f(x) = 3 + 2x$ and $F(x) = f(x + 3)$



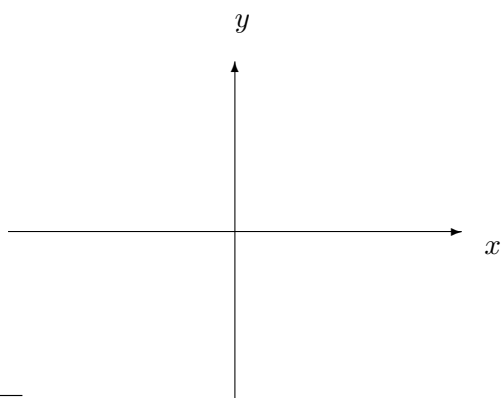
(b) $g(x) = |x|$ and $G(x) = 3 + g(x - 2)$.



(c) $h(x) = \sqrt{x}$ and $H(x) = 2 - h(x + 1)$.



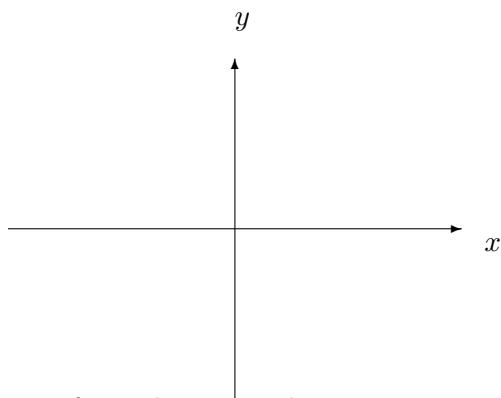
(d) $k(x) = \frac{1}{x}$ and $K(x) = \frac{1}{x - 2}$.



(4) Consider the function $f(x) = \sqrt{3 - x}$.

(a) Find the domain and the range of f .

(b) Graph f and f^{-1} in the same coordinates system.



(c) Find a formula for $f^{-1}(x)$ and specify its domain and range.