Name _____

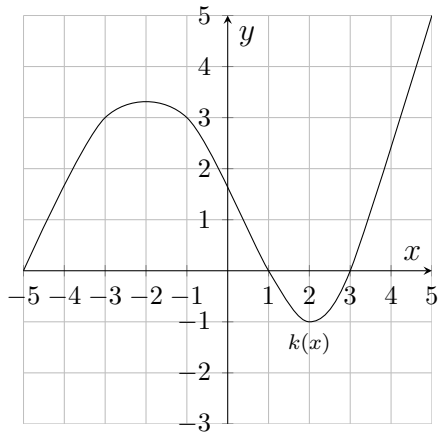
Homework 3
Section 2.2

1. (2ea) Use the functions below to compute the following quantities.

$$f(x) = x^2 - 2$$

$$g(x) = \frac{2x}{x-3}$$

| $x$ | $-2$ | $-1$ | $0$ | $1$ | $2$ | $3$ |
|---|---|---|---|---|---|---|
| $h(x)$ | $-3$ | $2$ | $1$ | $3$ | $-4$ | $5$ |




(a) $(f+g)(1)$

(b) $(fh)(-2)$

(c) $(g \circ f)(x)$

(d) $(h+k)(-1)$

(e) $(f \circ f)(3)$

2. (2ea) Consider the functions $f(x) = x^2 + 3x$ and $g(x) = 4x - 1$.

   (a) Determine (and simplify) $(f - g)(x)$

   (b) Determine (and simplify) $(fg)(x)$

   (c) Find a function $h(x)$ so that $(f + h)(x) = g(x)$

3. (2ea) Determine functions $f(x)$ and $g(x)$ so that $f(g(x)) = h(x)$ for the functions below. [Do not use $f(x) = x$ or $g(x) = x$.]

   (a) $h(x) = (x^2 + 1)^{15}$

   (b) $h(x) = e^{\sqrt{x}}$