

1. Let $f(x) = x^2 + 2x$. Evaluate:

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|-------------|----------------|---------------------------------|
| (a) $f(2)$ | (d) $f(a + b)$ | (g) $\frac{f(x + h) - f(x)}{h}$ |
| (b) $f(-3)$ | (e) $f(2x)$ | |
| (c) $f(a)$ | (f) $f(-x)$ | |

2. Let $g(x) = \frac{1}{1-x}$. Evaluate:

- | | |
|------------|---------------------------------|
| (a) $g(0)$ | (c) $g(x^2)$ |
| (b) $g(1)$ | (d) $g\left(\frac{1}{x}\right)$ |

3. Determine if the following are functions:

	x	y	
(a)	-1	9	(b) $\{(0, 3), (-2, 1), (1, 5), (0, -4), (2, -1)\}$
	0	10	(c) $\{(5, 7), (-1, 6), (0, 3), (1, 6)\}$
	1	11	(d) $f(x) = \begin{cases} x + 1, & x \geq 1 \\ -x - 3, & x \leq 1 \end{cases}$
	2	12	

4. Find the domain and range of the following functions.

- (a) the horizontal line $y = 4$
- (b) $\{(0, 6), (-1, 1), (1, 7), (3, -4), (2, 0)\}$
- (c) $g(x) = \begin{cases} 3, & -5 \leq x < 0 \\ -x, & x > 0 \end{cases}$
- (d) The relation which assigns to each UH student the last digit of their student ID number.

Know the graphs of each of the following basic functions.

- (1) constant function: $f(x) = c$, where c is a real number
- (2) linear function: $f(x) = ax + b$, where a, b are real numbers
- (3) square function: $f(x) = x^2$
- (4) cube function: $f(x) = x^3$
- (5) inverse function: $f(x) = \frac{1}{x}$
- (6) inverse square function: $f(x) = \frac{1}{x^2}$
- (7) square root function: $f(x) = \sqrt{x}$
- (8) cube root function: $f(x) = \sqrt[3]{x}$
- (9) absolute value function: $f(x) = |x|$