Name: __Solutions__   PID: _____

Note: This assignment has **four pages**. There are 32 total points.

Problem 1 (2 points). The number of cubic yards of dirt, D, needed to cover a garden with area a square feet is given by $D = g(a)$.

(a) A garden with area 5000 ft^2 requires 50 cubic hards of dirt. Express this information in terms of the function g.

Input: $a = 5000$

Output: $D = 50$

$$50 = g(5000)$$

(b) Explain the meaning of the statement $g(100) = 1$.

1 cubic yard of dirt is needed to cover a garden with area 100 square feet.

Problem 2 (2 points). Complete exercise 6 in Chapter 1.1; write the letters of the correct graphs here:

A , B, E

Problem 3 (2 points). Complete exercise 12 in Chapter 1.1; write the letters of the correct tables here:

C

Problem 4 (2 points). Complete exercise 14 in Chapter 1.1; write the letters of the correct graphs here:

$$E, F$$

Problem 5 (2 points). Solve exercise 28 in Chapter 1.1:

$f(-2) = \underline{4 - \sqrt[3]{-4}}$
$f(-1) = \underline{4 - \sqrt[3]{-3}}$
$f(0) = \underline{4 - \sqrt[3]{-2}}$
$f(1) = \underline{5}$
$f(2) = \underline{4}$

Problem 6 (2 points). Solve exercise 32 in Chapter 1.1:

$f(-2) = \underline{\text{No Solution / Undefined}}$
$f(-1) = \underline{-3}$
$f(0) = \underline{-1}$
$f(1) = \underline{-1/3}$
$f(2) = \underline{0}$

Problem 7 (4 points). Solve exercise 2 in Chapter 1.2.

Every number from -3 to 2, not including 2 →

Domain: $[-3, 2)$ Range: $[-5, 4]$

✓ Every number from -5 to 4, including -5 and 4

Problem 8 (4 points). Solve exercise 4 in Chapter 1.2.

Domain: Every number from 4 to 8, not including 8

Range: Every number from 2 to 8, not including 2.

$\boxed{4 \le n < 8}$

$\boxed{2 < p \le 8}$

Note:
You don't need to be this wordy, this is just an example explanation

Problem 9 (2 points). Solve exercise 8 in Chapter 1.2. Write your answer BOTH as an inequality and in interval notation.

f is undefined when the expression under the radical is negative, so we can't have $x+3 < 0$. This means the function is defined when $x+3 \geq 0$, which is when $\boxed{x \geq -3}$. Interval: $\boxed{[-3, \infty)}$
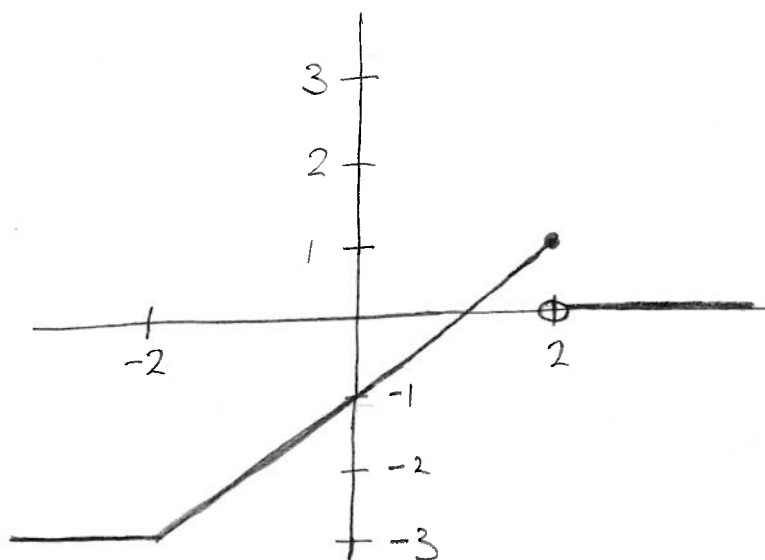
Problem 10 (2 points). Solve exercise 16 in Chapter 1.2. Write your answer BOTH as an inequality and in interval notation.

Can't have $x-6=0$ or $x+5<0$, so we need x to satisfy: $x \neq 6$ and $x \geq -5$.

Inequality: $\boxed{-5 \leq x < 6 \text{ or } x > 6}$ Interval: $\boxed{[-5,6) \cup (6,\infty)}$

Problem 11 (4 points). Sketch the graph of the function defined in exercise 36 of Chapter 1.2. You must label your axes.

Problem 12 (2 points). Solve exercise 4 in Chapter 1.3. Be sure to show your work.

$f(2) = 3$

$f(5) = 7$

$$\text{Average rate of change between } x=2 \text{ and } x=5 = \frac{f(5) - f(2)}{5-2} = \frac{7-3}{5-2} = \frac{4}{3}$$

Problem 13 (2 points). Solve exercise 8 in Chapter 1.3. Be sure to show your work.

$$h(-2) = 5 - 2(-2)^2 = 5 - 2 \cdot 4 = 5 - 8 = -3$$

$$h(4) = 5 - 2(4)^2 = 5 - 2 \cdot 16 = 5 - 32 = -27$$

$$\text{Average rate of change between } x=-2 \text{ and } x=4 = \frac{h(4) - h(-2)}{4 - (-2)} = \frac{-27 - (-3)}{4 - (-2)} = \frac{-24}{6} = -4$$

[OPTIONAL]

Survey Question. These questions help me understand how people are doing in the class. They are optional and not graded at all. Your feedback is appreciated and helps me make the class better.

1. Roughly how many hours did you spend working on this homework assignment?

2. Roughly how many hours did you spend studying, attending SI sessions, or reviewing your notes this week (not including homework time)?