Real Numbers I – Test

Class: ______ Number: _____ Name: _____

Part A: True/False (10 pts each)

Instruction: Mark "T" for true or "F" for false.

- ()1. 1.414 is an irrational number.
- ()2. There is no integer that has a reciprocal that is an integer.

Part B: Multiple Choice (10 pts each)

Instruction: Select the best answer from the provided options. There is at least one correct answer for each question.

- () 1. Let *a* and *b* be rational numbers, and *c* and *d* be irrational numbers. Which of the following statements is correct?
 - A) a + c is an irrational number.
 - B) c+d is an irrational number.
 - C) *ac* is an irrational number.
 - D) *cd* is an irrational number.
 - E) If $a \neq 0$, then $\frac{b}{a}$ is a rational number.
- () 2. Let a and b be real numbers, with $2 \le a \le 5$ and $-3 \le b \le 4$. Which of the following

statements is correct?

- A) $-1 \le a + b \le 9$
- B) $1 \le a b \le 5$
- C) $-15 \le ab \le 20$
- D) $-\frac{2}{3} \le \frac{a}{b} \le \frac{5}{4}$
- E) $9 \le b^2 \le 16$

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Part C: Short Answer (10 pts each)

Instruction: Provide clear and concise answers to each of the questions.

1. Simplify the following expressions:

i)
$$\sqrt{2} + \sqrt{8} + \sqrt{18} + \sqrt{32}$$
 ii) $\frac{\sqrt{5}}{\sqrt{3}} + \frac{\sqrt{3}}{\sqrt{5}}$

2. Let *a* and *b* be real numbers. Given $(2+\sqrt{3})a+(1-\sqrt{3})b=7-\sqrt{3}$, find the values of *a* and *b*.

3. Arrange π , $\sqrt{8}$, and $3.\overline{5}$ in order from greatest to least.

4. Let *a* and *b* be real numbers. Given $(a+b)^2 + (a-2b+6)^2 = 0$, find the values of *a* and *b*.

Part D: Problem Solving (10 pts each)

Instruction: Show all the necessary steps. Neatness counts. Be sure to include units of measurement where relevant.

Use a ruler and compass to locate $\frac{3}{5}$ and $-\frac{3}{5}$ on the number line.



Ch1. Real Numbers I – Answer Key

Part A

- 1. F
- 2. F

Part B

- 1. AE
- 2. AC

Part C

- 1. i) 10√2
- ii) $\frac{8}{15}\sqrt{15}$
- 2. a = 2, b = 3
- 3. $3.\overline{5} > \pi > \sqrt{8}$



ii)



Ch1. Real Numbers I – Vocabulary

- 1. irrational number 無理數
- 2. integer 整數
- 3. reciprocal 倒數
- 4. rational number 有理數
- 5. ruler 尺
- 6. compass 圓規