TB(2B) Ch. 10 Pyth. Thm & Irrational Numbers

Rational and Irrational Numbers

Multiple Choice Questions

1. [13-14 Standardized Test 2]

Which of the following is an irrational number?

A. $\frac{22}{7}$

B. 3.1415

C. $\sqrt{4}+\sqrt{12}$

D. $0.\dot{1}\dot{2}+0.034\dot{5}$

2. [13-14 Standardized Test 2]

If $\frac{1}{a}+\frac{1}{b}=\frac{3\sqrt{2}}{4}$ and $\frac{1}{a^2}+\frac{1}{b^2}=\frac{5}{8}$, then $ab =$

A. $\frac{1}{4}$.

B. 1.

C. 4.

D. $\frac{15\sqrt{2}}{32}$.

3. [13-14 Final Exam, #2]

Simplify $\sqrt{75}+\sqrt{27}-\sqrt{60}\div\sqrt{5}$.

A. $\sqrt{3}$

B. $4\sqrt{3}$

C. $6\sqrt{3}$

D. $10\sqrt{3}$

4. [13-14 Final Exam, #14]

If $a=k+\sqrt{2}$ and $b=k-\sqrt{2}$ where k is an integer, which of the following is/are rational?

I. ab

II. $a+b$

III. a^2+b^2

A. I only

B. II only

C. I and II only

D. I, II and III

5. [13-14 S.6 Mock Exam #8]

Simplify $\left(a^2-\sqrt{3}a+1\right)\left(a^2+\sqrt{3}a+1\right)$.

A. a^4-a^2+1

B. a^4+a^2+1

C. $a^4-2a^2-2\sqrt{3}a-1$

D. $a^4+\sqrt{3}a^2-2\sqrt{3}a+\sqrt{3}a+1$

6. [14-15 Standardized Test #2]

For $a > b > c > 0$, which of the following must be true?

A. $\sqrt{-a} = -\sqrt{a}$

B. $\sqrt{\frac{a}{b}} = \sqrt{a} - \sqrt{b}$

C. $\sqrt{a+b} = \sqrt{a} + \sqrt{b}$

D. $\sqrt{abc} = \sqrt{a} \cdot \sqrt{b} \cdot \sqrt{c}$

7. [14-15 Standardized Test #10]

If $\frac{1}{a} - b = \sqrt{2}$ and $\frac{1}{a^2} + b^2 = \sqrt{5}$, then $\frac{b}{a} =$

A. $\frac{\sqrt{5}-2}{2}$. **B.** $\frac{\sqrt{5}+2}{2}$.

C. $\sqrt{5}-2$. **D.** $\sqrt{5}+2$.

8. [14-15 Final Exam #6]

Which of the following is an irrational number?

A. 0 **B.** 3^{-2}

C. $\left(\frac{\pi}{3}\right)^0$ **D.** $\sqrt{242}$

9. [15-16 Final Exam #1]

Which of the following is an irrational number?

A. $2\sqrt{5} - \sqrt{5}$

B. 0.012345678901253

C. $1 + \pi^0$

D. $\sqrt{27} - 3\sqrt{3}$

10. [15-16 Standardized Test #6]

$\frac{2\sqrt{3}}{2-\sqrt{3}} =$

A. $6 + 4\sqrt{3}$.

B. $9 + 4\sqrt{3}$.

C. $-5 + \sqrt{3}$.

D. $-\frac{6+4\sqrt{3}}{5}$.

11. [15-16 Standardized Test #10]

$$\frac{1}{\sqrt{1}+\sqrt{2}}+\frac{1}{\sqrt{2}+\sqrt{3}}+\ldots+\frac{1}{\sqrt{6}+\sqrt{7}}=$$

A. $1-\sqrt{7}$.

B. $\sqrt{7}-1$.

C. $\frac{1}{28}$.

D. $\frac{1}{\sqrt{3}+\sqrt{5}+\sqrt{7}+\sqrt{9}+\sqrt{11}+\sqrt{13}}$

12. [15-16 Standardized Test #3]

Which of the following expressions is an irrational number?

A. π

B. $\sqrt{12}\times\sqrt{27}$

C. $123.567\dot{8}$

D. $\left(\sqrt{4}-\sqrt{3}\right)\left(\sqrt{3}+\sqrt{4}\right)$

13. [17-18 Standardized Test 2 #10]

Which of the following statements is wrong?

A. The product of two irrational numbers may be rational.

B. The difference of two rational numbers must be rational.

C. The sum of two irrational numbers may be rational.

D. The difference of two rational numbers must be an integer.

14. [17-18 S2 Final Exam #4]

Which of the following is an irrational number?

A. $1.\dot{8}\dot{9}$

B. 3.141592654

C. $\sqrt{17\frac{13}{36}}$

D. $\frac{3}{\sqrt{75}}$

~ End ~