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

Rational and Irrational Numbers

Conventional Questions

1. [11-12 STest2]

(a) Simplify $\sqrt{30}\times\sqrt{72}$. **(2 marks)**

(b) Simplify $\dfrac{12}{\sqrt{27}}-\dfrac{\sqrt{12}}{3}$. **(3 marks)**

2. [11-12 STest2]

Expand $\left(\sqrt{2}-1\right)\left(4\sqrt{2}+3\right)\left(\sqrt{2}+5\right)$. **(4 marks)**

3. [12-13 STest2]

(a) Simplify $\sqrt{72}-\dfrac{14}{\sqrt{2}}$. **(2 marks)**

(b) Hence, or otherwise, simplify $\left(\sqrt{288}-\dfrac{28}{\sqrt{2}}\right)^3$. **(2 marks)**

(c) Victor claims that the sum of two irrational numbers must be an irrational number. Do you agree? Explain your answer with an example. **(1 mark)**

4. [13-14 STest2, #4]

(a) Simplify $\left(\sqrt{5}+\sqrt{3}\right)\left(\sqrt{5}-\sqrt{3}\right)$. **(2 marks)**

(b) Simplify $\dfrac{2}{\sqrt{6}}-\dfrac{\sqrt{54}}{4}+3\times\sqrt{\dfrac{2}{3}}$. **(3 marks)**

5. [13-14 Final Exam, #2]

Simplify $\sqrt{96}-\dfrac{6}{\sqrt{3}}\times\sqrt{2}+\dfrac{\sqrt{6}}{2}$. **(3 marks)**

6. [14-15 Standardized Test, #1]

(a) Simplify $\left(3\sqrt{5}-2\sqrt{3}\right)\left(3\sqrt{5}+2\sqrt{3}\right)$. **(2 marks)**

(b) Simplify $\dfrac{\sqrt{2}}{5}-\dfrac{3}{\sqrt{128}}$. **(2 marks)**

7. [14-15 Final Exam, #6]

Simplify $\frac{2}{\sqrt{7}} + \sqrt{63} - \sqrt{28}$. **(3 marks)**

8. [15-16 Final Exam, #4]

(a) Simplify $\frac{9\sqrt{70}}{\sqrt{2}} - 5\sqrt{140}$. **(3 marks)**

(b) Write down two irrational numbers such that their product is an integer. **(1 mark)**

9. [15-16 Standardized Test, #9]

A, *B* and *C* are three points on a rectangular coordinate plane. It is given that $AB = \sqrt{50}$, $BC = \sqrt{128}$ and $AC = \sqrt{18}$. What will be formed when *A*, *B* and *C* are joined? Explain briefly.

(2 marks)

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