

Name Key

Date _____

Mrs. Roumbos

Homework

8A Period _____

1) Which number is rational?

- 1) π
- 2) $\frac{5}{4}$ Fraction
- 3) $\sqrt{7}$
- 4) $\sqrt{\frac{3}{2}}$

2) Which is a rational number?

- 1) $\sqrt{8}$
- 2) π $5\sqrt{9}$
- 3) $5\sqrt{9}$ 5.3
- 4) $6\sqrt{2}$ 15
(whole #)

3) Which expression is rational?

- 1) π
 - 2) $\sqrt{\frac{1}{2}}$
 - 3) $\sqrt{3}$
 - 4) $\sqrt{\frac{1}{4}}$
- $\sqrt{\frac{1}{4}} = \frac{\sqrt{1}}{\sqrt{4}} = \frac{1}{2}$

4) The value of $\sqrt{x^2 - 9}$ is a real and irrational number when x is equal to

- 1) 5
 - 2) 0
 - 3) -3
 - 4) 4
- $\sqrt{(4)^2 - 9}$ NON-terminating and
 $\sqrt{16 - 9}$ NON-repeating decimal
 $\sqrt{7}$

5) Which number below is irrational?

- $\sqrt{\frac{4}{9}}$
- $\sqrt{20}$
- $\sqrt{121}$

Why is the number you chose an irrational number?

$\sqrt{20} \approx 4.472135955...$ It is irrational b/c it can't be written as the ratio of two integers where the denominator is not 0. or b/c it is a non-terminating and non-repeating decimal

6) The number 0.14114111411114... is

- 1) integral ~~patterns are not~~
- 2) rational rational, they are
- 3) irrational NOT considered repeating
- 4) whole

7) Which expression represents an irrational number?

- 1) $\sqrt{2}$ NON-terminating and
- 2) $\frac{1}{2}$
- 3) 0.17 non-repeating decimal
- 4) 0

8) Which number is irrational?

- 1) $\sqrt{9}$
- 2) $\sqrt{8}$ NON-terminating and
- 3) 0.3333 non-repeating decimal
- 4) $\frac{2}{3}$

9) Which is an irrational number?

- 1) $0.\bar{3}$
- 2) $\frac{3}{8}$ NON-terminating and
- 3) $\sqrt{49}$
- 4) π NON-repeating decimal

10) Given: $\frac{\sqrt{99}}{11}$, $\sqrt{164}$, $\sqrt{196}$

Identify the expression that is a rational number and explain why it is rational.

$\sqrt{196} = 14$ It is rational b/c it can be written as the ratio of two integers where the denominator is not 0.

Homework #5 continued

Name: _____

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- ★ 1. Is the product of $\sqrt{16}$ and $\frac{4}{7}$ rational or irrational? Explain your reasoning.

$$\sqrt{16} \cdot \frac{4}{7} = \frac{16}{7}$$

The product is rational B/C

① The product of two rational numbers is always rational

~ OR ~

② The product can be written as the ratio of two integers where the denominator is not 0.

2. Is the product of $\sqrt{1024}$ and -3.4 rational or irrational? Explain your answer.

$$\sqrt{1024} \cdot -3.4 = -108.8$$

The product is rational B/C

① The product of two rational numbers is always rational

~ OR ~

② The product can be written as the ratio of two integers where the denominator is not 0

3. Which expression results in a rational number?

A. $\sqrt{121} - \sqrt{21} = 7$
C. $417424305\dots$

C. $\sqrt{36} \div \sqrt{225} = .4$
E. $2 \div 2$

B. $\sqrt{25} \cdot \sqrt{50} = 35.35533906\dots$

D. $3\sqrt{5} + 2\sqrt{5} = 11.18033989\dots$

4. Jakob is working on his math homework. He decides that the sum of the expression $\frac{1}{3} + \frac{6\sqrt{5}}{7}$ must be rational because it is a fraction. Is Jakob correct? Explain your reasoning.

$$\frac{1}{3} + \frac{6\sqrt{5}}{7} = 2.249963028\dots$$

Jakob is incorrect the sum of $\frac{1}{3}$ and $\frac{6\sqrt{5}}{7}$ is irrational B/C

① The sum of a rational number and an irrational number is always irrational

~ OR ~

② The sum is a non-terminating and a non-repeating decimal