

Warmup

① Multiply

$$3x(-10x^3 - 6x + 12)$$
$$\underline{-30x^4 - 18x^2 + 36x}$$

② $\frac{450 \text{ km}}{\text{hr}}$ to $\frac{\text{cm}}{\text{sec}}$

- ③ Rat or IRR
- Ⓐ $\sqrt{3}$ Ⓑ $-\frac{2}{3}$ Ⓒ $\sqrt{3} \cdot \sqrt{12}$
- IRR Rat = Rat
= 6

$$\frac{450 \text{ km}}{\text{hr}} \cdot \frac{1 \text{ hr}}{60 \text{ mins}} \cdot \frac{1 \text{ min}}{60 \text{ sec}} \cdot \frac{100000 \text{ cm}}{1 \text{ km}}$$
$$= \boxed{12,500 \text{ cm/sec}}$$

Rational or Irrational

Identify the following as rational or irrational.

1) $\frac{2}{3}$

Rat

2) $\sqrt{27}$ $3\sqrt{3}$

IRR

3) 4.575

Rat

4) $18.\overline{45}$ → Repeats

Rat

5) $\sqrt{147}$

IRR

6) $\sqrt{100} = 10$

Rat

7) $\sqrt[3]{17}$

IRR

8) $2\frac{4}{5}$ Rat

9) π

IRR

10) -264

Rat

11) $\sqrt{27} + \sqrt{3} = 4\sqrt{3}$

IRR

12) $4 + 0.28 = 4.28$

Rat

13) $3 + \sqrt{5}$

IRR

14) $3\sqrt{5} - \sqrt{20} = \sqrt{5}$

IRR

15) $2\sqrt{10} \cdot \sqrt{20}$

 $20\sqrt{2} \rightarrow$ IRR

16) $\sqrt{10} \cdot 4\sqrt{10} = 40$

Rat

17) $\sqrt{6} \cdot 7$

IRR

18) $\sqrt{12} \cdot \sqrt{3} = 6$

Rat

19) $\frac{5}{6} + \frac{3}{4} = \frac{19}{12}$

Rat

20) $20.35 + 2.45$

22.8
Rat

Identify each of the following as rational or irrational.
Then choose the appropriate rule that justifies your answer.

Rules:

- A. The sum of two rational numbers is always rational.
- B. The sum of two irrational numbers is sometimes irrational.
- C. The sum of two irrational numbers is sometimes rational.
- D. The sum of one rational number and one irrational number is always irrational.
- E. The product of two rational numbers is always rational.
- F. The product of two irrational numbers is sometimes rational.
- G. The product of two irrational numbers is sometimes irrational.
- H. The product of one rational number and one irrational number is sometimes irrational.
- I. The product of one rational number and one irrational number is sometimes rational.

21) $6 + \sqrt{4} = 8$
Rat + Rat = Rat (A)

22) $2 \times 4.5 = 9$
Rat • Rat = Rat (E)

23) $\sqrt{6} + 8 = 10$
IRR + Rat = IRR (D)

24) $\sqrt{10} \cdot \sqrt{3} = \sqrt{30}$
IRR • IRR = IRR (G)

25) $\sqrt{12} \cdot \sqrt{3} = 6$
IRR • IRR = Rat (F)

26) $\sqrt{5} + \sqrt{15}$
IRR + IRR = IRR (B)

27) $\sqrt{5} \cdot 0 = 0$
IRR • Rat = Rat (I)

28) $\sqrt{7} \cdot 18$
IRR • Rat = IRR (H)

29) $3\sqrt{5} - 3\sqrt{5} = 0$
IRR - IRR = Rat (C)

30) $3\sqrt{2} \cdot \sqrt{8} = 12$
IRR • IRR = Rat (F)