

Always, Sometimes, Never?

Rational and Irrational Numbers

For each of these statements, decide whether they are always, sometimes or never true. Explain your reasoning and support your argument with examples.

The sum of two rational numbers is a rational number	The circumference of a circle is an irrational number
Always True $-4 + \frac{3}{7} = -\frac{25}{7}$	Sometimes True $\pi \times 30 = 30\pi$ but $\pi \times \frac{10}{\pi} = 10$
The difference between two irrational numbers is an irrational number	The product of two rational numbers is an irrational number
Sometimes $\sqrt{6} - \sqrt{2} = \sqrt{6} - \sqrt{2}$ but $\pi - (-\pi) = 0$	Never $\frac{5}{9} + 2.56 = \frac{701}{225}$
The area of a square is a rational number	The product of a rational number and an irrational number is irrational
Sometimes $A = 3 \times 3 = 9$ but $A = \pi \times \pi = \pi^2$	Sometimes $2 \times \sqrt{3} = 2\sqrt{3}$ but $0 \times \pi = 0$