

Notes #1 ~ Sect. 10.3: Finding & Estimating Square Roots

A radical symbol $\sqrt{\quad}$ indicates a **square root**.

The expression $\sqrt{16}$ means the positive, or **principal square root** of 16.

The expression $-\sqrt{16}$ means the **negative square root** of 16.

The expression under the radical sign is a **radicand**.

You can use the symbol \pm to indicate both square roots.

Ex. 1: Simplify each expression.

a) $\sqrt{25} =$

c) $-\sqrt{64} =$

e) $\sqrt{\frac{1}{16}} =$

b) $\pm\sqrt{\frac{9}{25}} =$

d) $\sqrt{-49} =$

Some square roots are rational numbers and some are irrational numbers.

Rational: $\sqrt{100} = 10$ $\pm\sqrt{0.36} = \pm 0.6$ $\sqrt{\frac{16}{121}} = \frac{4}{11}$

Irrational: $\sqrt{10} \approx 3.16227766$ $\sqrt{\frac{1}{7}} \approx 0.377964473$

Ex. 2: Tell whether each expression is rational or irrational.

a) $\pm\sqrt{144}$

d) $\sqrt{\frac{1}{9}}$

b) $-\sqrt{\frac{1}{5}}$

e) $\sqrt{7}$

c) $-\sqrt{6.25}$

The squares of integers are called **perfect squares**.

consecutive integers:	1	2	3	4	5	6	...
	↓	↓	↓	↓	↓	↓	
consecutive perfect squares:	1	4	9	16	25	36	...

Ex. 3: Between what two consecutive integers is each square root?

a) $\sqrt{28.34}$

b) $-\sqrt{105}$

Ex. 4: Use a calculator to find each square root to the nearest hundredth.

a) $\sqrt{14.52} =$

b) $\sqrt{17.81} =$