RATIONAL NUMBERS

- Any number that can be written as a simple fraction
  - Terminating or repeating decimals

OR WHOLE NUMBER

0, 5, -2, $\frac{3}{2}$, .111, 1.75

1.5

IRRATIONAL NUMBER

- Any number that CANNOT be written as a simple fraction
  - Decimal that goes on forever without repeating

$$\pi, \frac{22}{7}, \sqrt{2}$$

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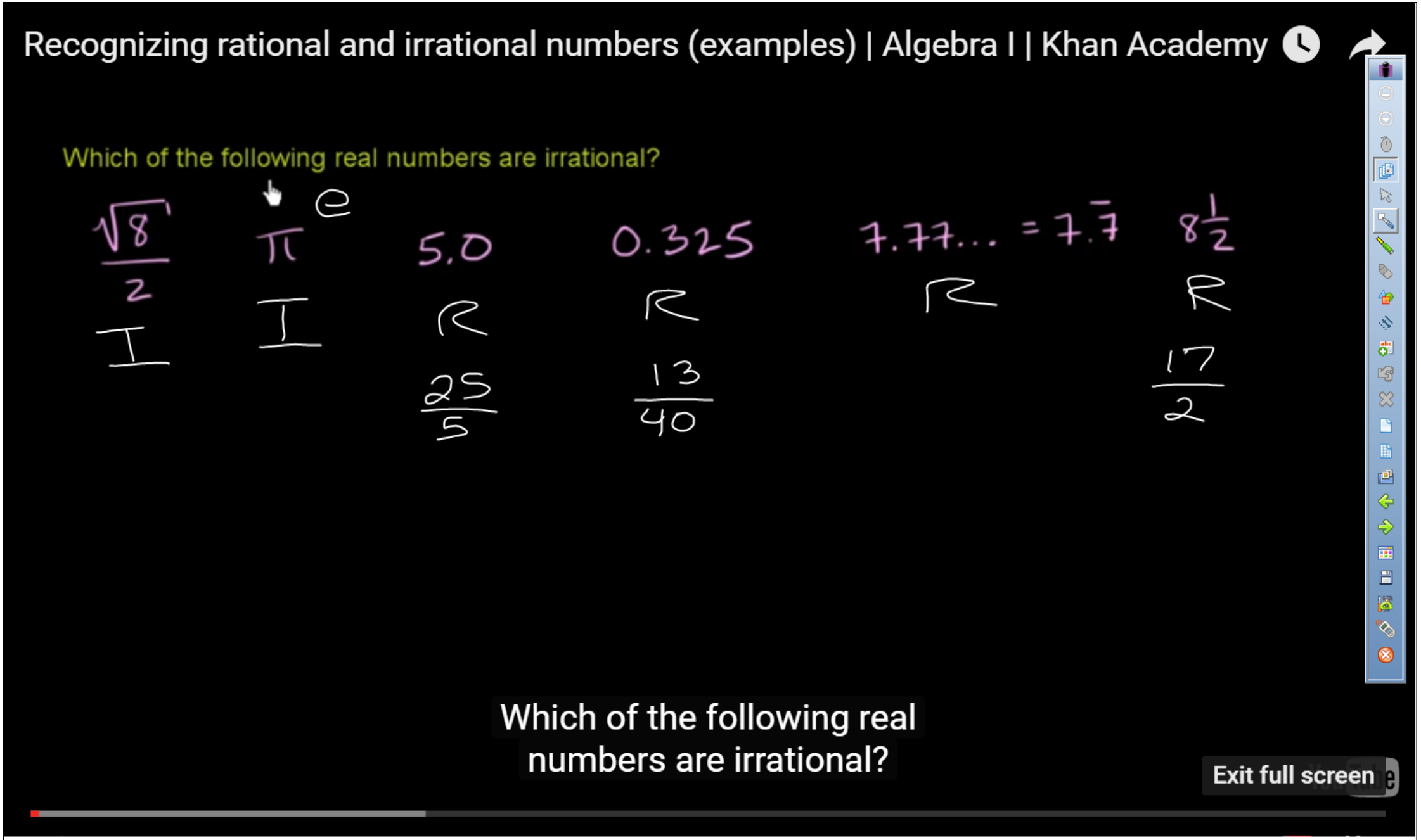
Recognizing rational and irrational numbers (examples) | Algebra I | Khan Academy
Which of the following real numbers are irrational?
$\frac{\sqrt{8}}{2}$
I
π
I
e
5.0
R
$\frac{25}{5}$
0.325
R
$\frac{13}{40}$
7.77... = $7.\overline{7}$
R
$8\frac{1}{2}$
R
$\frac{17}{2}$
Which of the following real numbers are irrational?
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RATIONAL OR IRRATIONAL?

$\sqrt{5}$ IRRATIONAL

$\frac{1}{2}$ RATIONAL

2 RATIONAL

2.7854602582... IRRATIONAL

$1.3333\overline{3}$ RATIONAL

$\sqrt{10}$ IRRATIONAL

$\frac{\sqrt{4}}{2}$ RATIONAL

$\frac{407}{528}$ RATIONAL

IRRATIONAL AND RATIONAL RULES

1) An irrational number $\pm$ irrational number = irrational number

2) A rational $\pm$ rational number = rational number

3) An irrational number $\pm$ rational number = irrational number

ARE THE FOLLOWING RATIONAL OR IRRATIONAL?

1) $\sqrt{2} + 3 = $ IRRATIONAL
   I + R

2) $\sqrt{2} + \sqrt{2} = $ IRRATIONAL
   I + I → $2\sqrt{2}$

3) $\frac{1}{2} + \frac{1}{4} = $ RATIONAL
   R R

4) $5 - 5 = $ RATIONAL
   R R

5) $\frac{1}{3} - 0.211 = $ RATIONAL
   R R

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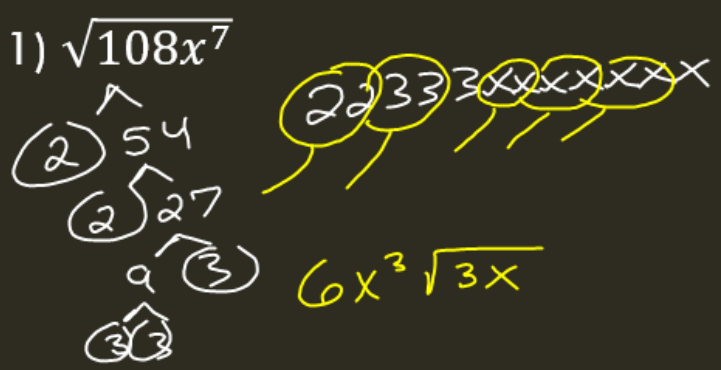
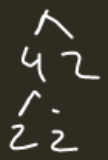
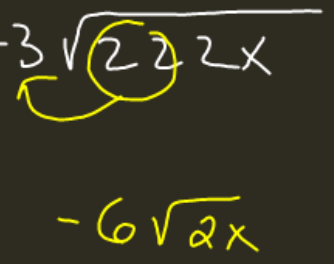
RADICAL PRACTICE

1) $\sqrt{108x^7}$

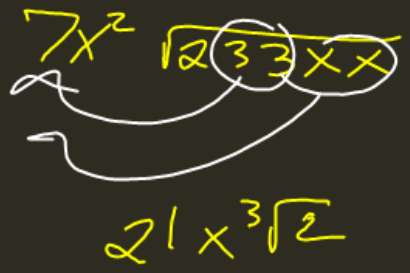


2) $-3\sqrt{8x}$

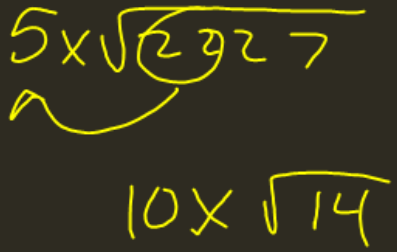




3) $7x^2\sqrt{18x^2}$



4) $5x\sqrt{56}$



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MULTIPLY

$3x\sqrt{7} \cdot \sqrt{24x^2}$

$3x\sqrt{168x^2}$

84

42

6

$2 \cdot 2 \cdot 3 \cdot 7 \cdot x \cdot x$

$6x^2\sqrt{42}$

$5a^2\sqrt{25a} \cdot 4\sqrt{12a^4}$

$20a^2\sqrt{300a^5}$

$30 \quad 10$

$6 \quad 5 \quad 5 \quad 2$

$2 \quad 3$

$20a^2\sqrt{2 \cdot 2 \cdot 3 \cdot 5 \cdot 5 \cdot a \cdot a \cdot a \cdot a \cdot a}$

$20a^4\sqrt{3a}$

ADD/SUBTRACT

$5\sqrt{3} + 2\sqrt{75}$

25 3

5 5

$5\sqrt{3} + 10\sqrt{3}$

$15\sqrt{3}$

$6\sqrt{2} - 3\sqrt{2}$

$3\sqrt{2}$

$5\sqrt{8} - 3\sqrt{18} + \sqrt{3}$

4 2

2 2

9 2

3 3

$10\sqrt{2} - 9\sqrt{2} + \sqrt{3}$

$\sqrt{2} + \sqrt{3}$