

Alg 1A-BE MONDAY 4-27-09

- ① Find the slope of the line through $(-2, -4)$, $(3, 1)$.
- ② Using m from #①, find the EOL (Equation of the Line) through $(-2, -4)$, $(3, 1)$.
- ③ Graph the EOL from #②.
- ④ Complete the table (No calculators):

1	$1^2 =$	$\sqrt{\quad} =$	1
2	$2^2 =$	$\sqrt{\quad} =$	2
3	$3^2 =$	$\sqrt{\quad} =$	3
4	$4^2 =$	$\sqrt{\quad} =$	4
5	$5^2 =$	$\sqrt{\quad} =$	5
6	$6^2 =$	$\sqrt{\quad} =$	6
7	$7^2 =$	$\sqrt{\quad} =$	7
8	$8^2 =$	$\sqrt{\quad} =$	8
9	$9^2 =$	$\sqrt{\quad} =$	9
10	$10^2 =$	$\sqrt{\quad} =$	10
11	$11^2 =$	$\sqrt{\quad} =$	11
12	$12^2 =$	$\sqrt{\quad} =$	12

⑤ What is $\sqrt{20}$?

↑
?

↑
?

$\sqrt{x}$

RADICAL SYMBOL OR SQUARE ROOT SYMBOL

MEANS: find a number THAT times itself equal x

EX) $\sqrt{16} = 4 = \frac{4}{1} = \underline{\text{RATIONAL}}$

NUMBER
 $\Rightarrow$ EXACT

called
A
"perfect"
square

EX) $\sqrt{20} \approx 4.472135955...$

IR RATIONAL

GO ON FOR INFINITY
WITH NO PATTERN

NOTICE, IT IS BETWEEN 4 AND 5

$$4^2 = 16 \quad \sqrt{16} = 4$$

$$?^2 = 20 \quad \sqrt{20} = ?$$

$$5^2 = 25 \quad \sqrt{25} = 5$$

The more digits you use, the closer to 20 you get:

APPROXIMATE $(4.4)(4.4) = 19.36$ RATIONAL

APPROXIMATE $(4.47)(4.47) = 19.9809$ RATIONAL

APPROXIMATE $(4.472)(4.472) = 19.998784$ RATIONAL

APPROXIMATE $(4.4721)(4.4721) = 19.99967841$ RATIONAL

EXACT $\sqrt{20} \cdot \sqrt{20} = 20$ or $(\sqrt{20})^2 = 20$

Although $\sqrt{20}$ is EXACT, it is NOT in simplest form. To get in simplest form you must take the exact square root of any perfect square factors of 20 since the following property of radicals is true:

$$\sqrt{ab} = \sqrt{a} \sqrt{b}$$

$$\textcircled{\text{EX}} \quad \sqrt{20} = \sqrt{2} \sqrt{10}$$

Since neither 2 or 10 are "perfect squares" these factors do not help. Are there any perfect square factors of 20?

List perfect squares from 1 to ≤ 20

$$\Rightarrow 1^2 = 1 \text{ DON'T CARE}$$

$$2^2 = 4 \text{ YES!}$$

$$3^2 = 9 \text{ NO}$$

$$4^2 = 16 \text{ NO}$$

$$5^2 = 25 \text{ TOO BIG}$$

$$\longrightarrow \therefore \sqrt{20} = \sqrt{4} \sqrt{5}$$

$$= \boxed{2\sqrt{5}} \text{ Simplified}$$

$$\text{NOTE: } 2\sqrt{5} = 2(2.236067977\dots)$$

$$= 4.47213595(5)\dots$$

↑
ROUND OFF

Simplify: Look for factors: 4, 9, 16, 25, 36, 49, 64, 81, 100
etc.

(A) $\sqrt{18}$

(B) $\sqrt{50}$

(C) $\sqrt{12}$

(D) $\sqrt{21}$

(E) $\sqrt{40}$

If you don't see a large factor at first, work your way down:

(EX) $\sqrt{80}$

$\sqrt{4} \sqrt{20}$

$2 \sqrt{20}$

$2 \sqrt{4} \sqrt{5}$

$2 \cdot 2 \sqrt{5}$

$\boxed{4\sqrt{5}}$

$\sqrt{80}$

$\sqrt{16} \sqrt{5}$

$\boxed{4\sqrt{5}}$

↔

Since $\sqrt{ab} = \sqrt{a} \sqrt{b}$

then $\sqrt{a} \sqrt{b} = \sqrt{ab}$

$$\begin{aligned} \textcircled{\text{EX}} \quad \sqrt{2} \sqrt{10} &= \sqrt{20} \\ &= \sqrt{4} \sqrt{5} \\ &= \boxed{2\sqrt{5}} \end{aligned}$$

$$\begin{aligned} \textcircled{\text{EX}} \quad \sqrt{3} \sqrt{15} &= \sqrt{45} \\ &= \sqrt{9} \sqrt{5} \\ &= \boxed{3\sqrt{5}} \end{aligned}$$

$$\textcircled{\text{EX}} \quad 5\sqrt{8} \cdot 2\sqrt{5}$$

$$= 10\sqrt{40}$$

$$10 \sqrt{4} \sqrt{10}$$

$$10 \cdot 2 \sqrt{10}$$

$$\boxed{20\sqrt{10}}$$

Number • Number $\sqrt{} \cdot \sqrt{}$

• Homework Pg 589-590 # 4-6, 15-21
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