

$$\begin{aligned}
 V &= \pi r^2 h \\
 &= \pi (2.3)^2 (18.3) \\
 &= 96.807 \pi \quad \text{Use } \pi \text{ Key.} \\
 &\approx \underline{304.12816} \text{ m}^3
 \end{aligned}$$

$$1.78$$

$$12.162$$

$$\approx 12.2$$

$$\approx$$

$$12.162 \approx 12.2$$

$\pi$   
3.14 ain't  
good enough.

## §2.5 Compound Inequalities

AND  $\in$

$$A \cap B = \{x \mid x \in A \text{ AND } x \in B\} \quad \begin{array}{l} \text{Intersection} \\ \text{Conjunction.} \end{array}$$

$\wedge$

OR

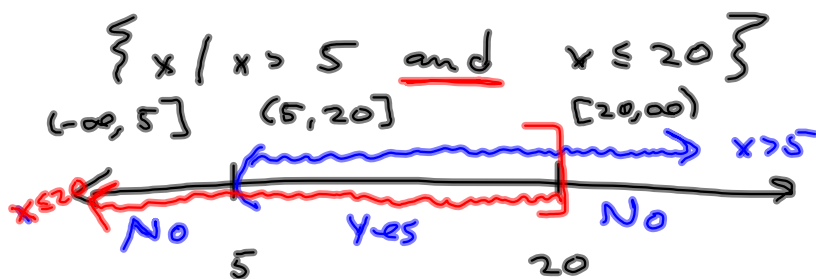
$$A \cup B = \{x \mid x \in A \text{ OR } x \in B\} \quad \begin{array}{l} \text{Union} \\ \text{Disjunction} \end{array}$$

$\forall$   
#s 1-12 if this is totally new to you.

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$\int_{2.5}^{\infty} \#s \ 14, 16, 20, 25, 40, 55$

1.78

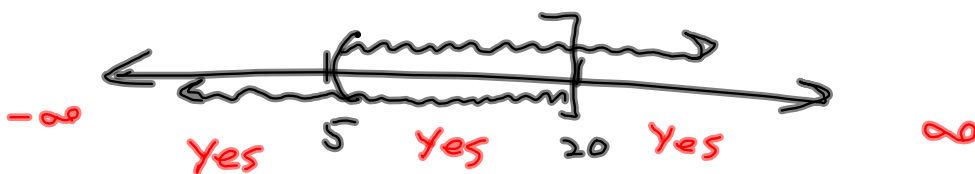


12.162

$\approx 12.2$

$(5, 20]$

$\{x \mid x > 5 \text{ OR } x \leq 20\}$



$$\boxed{(-\infty, 5] \cup (5, 20] \cup (20, \infty)}$$
$$= (-\infty, \infty) = \mathbb{R}$$

Compact Form of special "AND"  
situations. De-emphasize.

↳ Can lead to bad habits  
that hurt you in the  
"OR" situations in  
§2.7.

$$-3 < 2x+5 < 7$$

$$\underline{-5 = \quad -5 = -5}$$

$$-8 < 2x < 2$$

Need

Need

$$-\frac{8}{2} < \frac{2x}{2} < \frac{2}{2}$$

$$-4 < x < 1$$

optional

need



$$x \in (-4, 1)$$

(65)  $5 - x > 7$  and  $2x + 3 \geq 13$

$$-x > 2$$

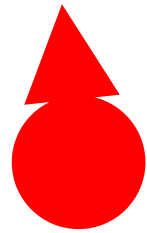
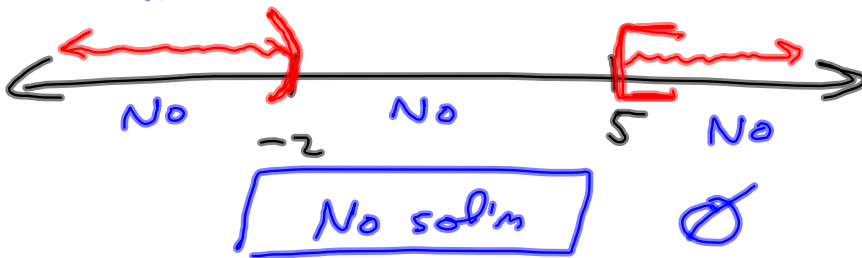
$$\frac{-x}{-1} < \frac{2}{-1}$$

$$x < -2$$

$$2x \geq 10$$

$$x \geq 5$$

AND



Like #65, only OR situation.

(\*)

$$5 - x > 7$$

OR

$$2x + 3 \geq 13$$

$$-x > 2$$

$$2x \geq 10$$

$$\frac{-x}{-1} < \frac{2}{-1}$$

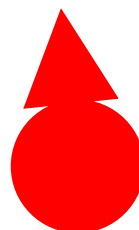
$$x \geq 5$$

OR

$$x < -2$$



$$x \in (-\infty, -2) \cup [5, \infty)$$



2.6

$$|3x+2| = 7$$

$$\Rightarrow 3x+2=7 \quad \text{OR} \quad 3x+2=-7, \text{ etc.}$$

$$|3x+2| = -7$$

$\emptyset$

2.7

$$|3x+2| < 7$$

$$\Rightarrow 3x+2 < 7 \quad \text{AND} \quad 3x+2 > -7, \text{ etc.}$$

$$|3x+2| < -7$$

$\emptyset$

$$|3x+2| > 7$$

$$3x+2 > 7 \quad \text{OR} \quad 3x+2 < -7$$

$$|3x+2| > -7 \quad \text{Always True}$$

$\mathbb{R}$

$(-\infty, \infty)$