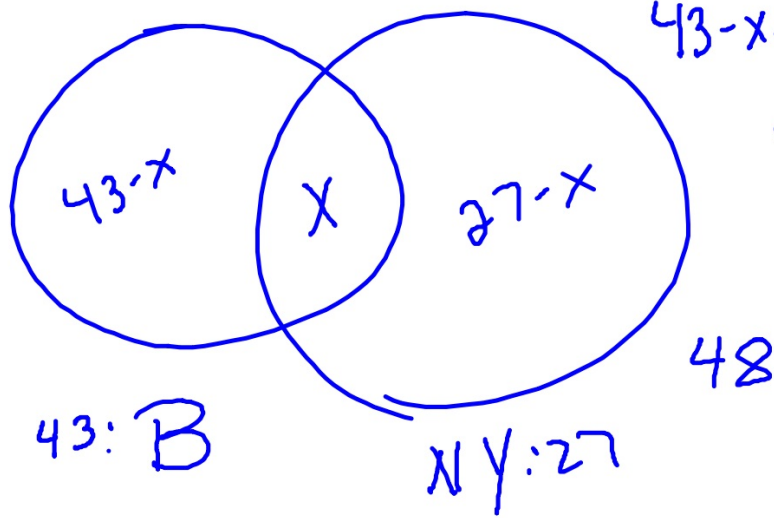


7.)



$$43-x+x+27-x=52$$

$$70-x=52$$

$$18=x$$

$$\begin{array}{r} 43 \\ 27 \\ \hline 70 \\ - 52 \\ \hline 18 \end{array}$$

## Set Theory

### Definitions

$\cup$  *union (everything in sets)*

$\cap$  *Intersection (in common)*

$\sim$  *complement (not in set)*

## Set Theory #1 Worksheet

2 Given: Set  $U = \{S, O, P, H, I, A\}$

universe

Set  $B = \{A, I, O\}$

$\sim$ : tilde

If set  $B$  is a subset of set  $U$ , what is the complement of set  $B$ ?

$\sim B$

- 1)  $\{O, P, S\}$
- 2)  $\{I, P, S\}$
- 3)  $\{A, H, P\}$
- 4)  $\{H, P, S\}$

6 Given:

$A = \{\text{perfect square integers from } 4\text{-}100, \text{ inclusive}\}$

$B = \{16, 36, 49, 64\}$

$\sim B$

The complement of set  $B$  in the universal set  $A$  is

1)  $\{9, 25, 81\}$

2)  $\{4, 9, 25, 81, 100\}$

3)  $\{1, 4, 9, 25, 81, 100\}$

4)  $\{4, 16, 36, 49, 64, 100\}$

$B'$

## Set Theory #2 Worksheet

1 Given:  $M = \{\text{green, red, yellow, black}\}$

$N = \{\text{blue, green, yellow}\}$

Which set represents  $M \cup N$ ?

- 1)  $\{\text{yellow}\}$
- 2)  $\{\text{green, yellow}\}$
- 3)  $\{\text{blue, red, black}\}$
- 4)  $\{\text{green, red, yellow, blue, black}\}$

5 Given:  $R = \{1, 2, 3, 4\}$

$A = \{0, 2, 4, 6\}$

$P = \{1, 3, 5, 7\}$

What is  $R \cap P$ ? *intersection*

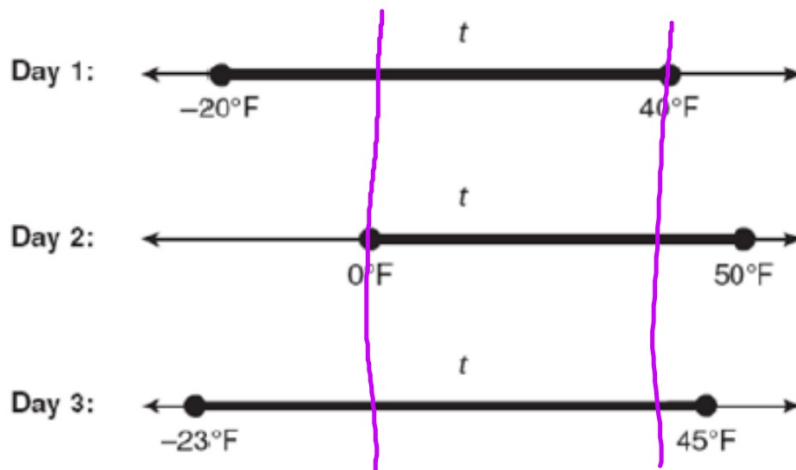
1)  $\{0, 1, 2, 3, 4, 5, 6, 7\}$

2)  $\{1, 2, 3, 4, 5, 7\}$

3)  $\{1, 3\}$

4)  $\{2, 4\}$

- 12 Maureen tracks the range of outdoor temperatures over three days. She records the following information.  $\text{Day 1} \cap \text{Day 2} \cap \text{Day 3}$



$$0 \leq t \leq 40$$

Express the intersection of the three sets as an inequality in terms of temperature,  $t$ .

$$6.) y = x^3 + 2x^2 + x + 2$$

5.) zeros  
All zeros

$$x^3 + 8 = 0$$
$$(x+2)(x^2 - 2x + 4) = 0$$
$$x = -2 \quad \downarrow$$



$|x|=10$

$$x^2 - 2x + 4 = 0$$

$$\sqrt{a^2 b}$$

$$x^2 - 2x + 1 = -4 + 1$$

$$|a|\sqrt{b}$$

$$\sqrt{(x-1)^2} = \sqrt{-3}$$

$$x-1 = \pm i\sqrt{3}$$

$$x = 1 \pm i\sqrt{3}$$

$$x = 1 \pm i\sqrt{3}$$

$$\frac{(x+3)(x-2)}{x+5(x-2)} + \frac{6}{(x+5)(x-2)}$$

$$\frac{x^2 + x - \cancel{6} + \cancel{6}}{(x+5)(x-2)}$$

$$\frac{x(x+1)}{(x+5)(x-2)}$$

$$12.) \quad x^2 \cdot 1 + x^2 \cdot \frac{1}{x^2} = \frac{3}{x} \cdot x^2$$

$$x \neq 0$$

$$x^2 + 1 = 3x$$

$$x^2 - 3x + 1 = 0$$

$$\frac{3 \pm \sqrt{9 - 4(1)(1)}}{2}$$

$$5.) \quad \textcircled{-5} \quad 1 \quad 5 \quad 0 \quad 8 \quad 40$$

$$\quad \quad \quad -5 \quad 0 \quad 0 \quad -40$$

---


$$1 \quad 0 \quad 0 \quad 8 \quad | \quad 0$$

$$x^3 + 8 = 0$$

$$\textcircled{(x+2)}(x^2 - 2x + 4) = 0$$

$$\textcircled{-2}$$

$$x^2 - 2x + 4 = 0$$

$$x^2 - 2x + 1 = -3$$

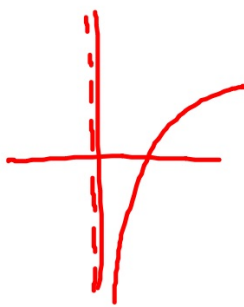
$$\sqrt{(x-1)^2} = \sqrt{-3}$$

$$x-1 = \pm i\sqrt{3}$$

$$x = \textcircled{1 \pm i\sqrt{3}}$$

Solve:

$$\log_3 x + \log_3 (x-6) = 3$$


$$3^{\log_3 x(x-6)} = 3^3$$

$$x^2 - 6x = 27$$

$$x^2 - 6x - 27 = 0$$

$$(x-9)(x+3) = 0$$

9, ~~-3~~

Evaluate:

$$27^{2/3}$$

$$9$$

$$(3^3)^{2/3}$$

$$81^{-3/4}$$

$$\frac{1}{27}$$

$$(3^4)^{-3/4}$$