

Math Analysis

P.1 Algebraic Expressions, Mathematical Models, and Real Numbers

$$T = 4x^2 + 341x + 3194$$

a) 2010  $x=10$   $T = 4(10)^2 + 341(10) + 3194$   
 $T = 400 + 3410 + 3194$   
 $T = \$7004$

√pt 2 :  $T = 4(15)^2 + 341(15) + 3194$   
 $\$9209$

Sets Rosier method  $\{1, 2, 5, 8, 100\}$   
 ↑  
 elements

Set  $\{1, 2, 3, 4, 5\}$

Set Builder Notation:  $\{x \mid \text{counting \#s} < 6\}$

Intersection  $\cap$  #'s in both (all) sets

$\{7, 8, 9, 10, 11\} \cap \{6, 8, 10, 12\}$

$\{8, 10\}$

Empty Set  $\emptyset$

$$\{2, 4, 6\} \cap \{3, 5, 7\}$$

$$\boxed{\{ \} \text{ or } \emptyset}$$

Union (U) all #'s in either set

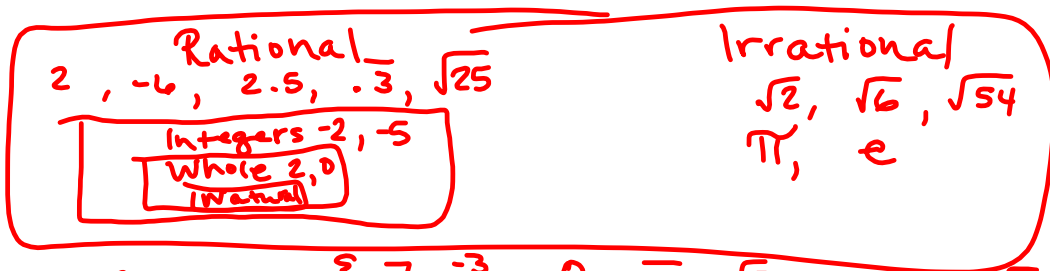
$$\{7, 8, 9, 10, 11\} \cup \{6, 8, 10, 12\}$$

$$\{6, 7, 8, 9, 10, 11, 12\}$$

$$\text{Jpt 4: } \{3, 4, 5, 6, 7\} \cup \{3, 7, 8, 9\}$$

$$\{3, 4, 5, 6, 7, 8, 9\}$$

## Real



- a)  $N = \{\sqrt{81}\}$        $\{-7, -\frac{3}{4}, 0, .\bar{6}, \sqrt{5}, \pi, 7.3, \sqrt{81}\}$   
 b)  $W = \{0\}$       d)  $Q = \{-7, -\frac{3}{4}, 0, .\bar{6}, 7.3, \sqrt{81}\}$   
 c)  $Z = \{-7, 0, \sqrt{81}\}$       e)  $I = \{\sqrt{5}, \pi\}$   
 f)  $R = \{-7, -\frac{3}{4}, 0, .\bar{6}, \sqrt{5}, \pi, 7.3, \sqrt{81}\}$

## Absolute Value

$$|x| = \begin{cases} x & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \end{cases}$$

$$|\sqrt{3} - 1| = |.732| \quad \text{if } x \geq 0 \quad = \sqrt{3} - 1$$

$$|2 - \pi| = |2 - 3.14| = |-1| = -(2 - \pi)$$

$$\boxed{-2 + \pi = \pi - 2}$$

$$\frac{|x|}{x} \quad \text{if } x < 0 \quad \frac{-x}{x} = -1$$

√pt 6

a)  $|1 - \sqrt{2}|$   
 $x < 0$

$-(1 - \sqrt{2})$

$-1 + \sqrt{2}$   
or  
 $\sqrt{2} - 1$

b)  $|\pi - 3|$   
 $x > 0$

$\pi - 3$

c)  $\frac{|x|}{x}$  if  $x > 0$

$\frac{x}{x} = 1$

pg 17; 12-36e, 40-66e, 76, 80, 96,  
102, 130, 134