

$$9a^3 = 16a$$

$$9a^3 - 16a = 0$$

$$a(9a^2 - 16) = 0$$

$$a = 0 \quad \text{or} \quad 9a^2 - 16 = 0$$
$$(3a - 4)(3a + 4)$$

$$\frac{9a^3}{a} = 9a^{3-1}$$

$$a^2 - b^2 = (a-b)(a+b)$$

$$9a^2 = 3^2 a^2 = (3a)^2$$

$$16 = 4^2$$

$$2^4 = 2^{2 \cdot 2} = (2^2)^2 = 4^2$$

2	16
2	8
2	4
2	

$$(a^b)^c = a^{bc}$$

write  $3^{18}$  as a square.

$$3^{\frac{18}{2} \cdot 2} = (3^9)^2 = 3^{9 \cdot 2} = (3^9)^2$$

write as a cube

$$3^{\frac{18}{3} \cdot 3} = 3^{6 \cdot 3} = (3^6)^3$$

write as a 5<sup>th</sup> power

$$3^{\frac{18}{5} \cdot 5} = (3^{\frac{18}{5}})^5$$

Test 1 #s 13c,d

I'm gonna see if I can throw those out.

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8'2.2 #79

$$h(t) = -\frac{1}{2}gt^2 + v_0t + h_0$$

$g$  = acceleration due to gravity ( $32 \text{ ft/s}^2$ ,  $9.8 \text{ m/s}^2$ )

$v_0$  = initial (upward) velocity

$h_0$  = initial height

$$v_0 = 80 \text{ ft/s}$$

$$h_0 = 96 \text{ ft} \quad \rightarrow$$

$$h(t) = -\frac{1}{2}(32 \text{ ft/s}^2)(t \text{ sec})^2 + (80 \text{ ft/s})(t \text{ sec}) + 96 \text{ ft}$$

$$= -16 \left( \frac{\text{ft}}{\cancel{s}} \cdot \cancel{s^2} \right) t^2 + \left( 80 \frac{\text{ft}}{\cancel{s}} \right) (t \cancel{s}) + 96 \text{ ft}$$

$$\text{ft} = -16t^2 + 80t + 96 \quad \text{ft}$$

When is it 192 ft in the air?

$$h(t) = 192 \quad \Rightarrow$$

$$-16t^2 + 80t + 96 = 192 \quad \Rightarrow$$

$$-16t^2 + 80t - 96 = 0 \quad \Rightarrow$$

$$-16(t^2 - 5t + 6) = 0 \quad \Rightarrow$$

$$\cancel{-16} \text{ or } t^2 - 5t + 6 = 0$$

When will the *whatever* hit the ground?

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§ 2.1 #33

$$\cancel{8} \left( -\frac{19}{\cancel{8}} \right) + 5y = 9 \Rightarrow$$

$$-\frac{19}{3} + 5y = 9 \Rightarrow$$

$$-\frac{19}{3} + \frac{5y}{1} \cdot \frac{3}{3} = \frac{9}{1} \cdot \frac{3}{3} \Rightarrow \text{LCD} = 3$$

$$\frac{-19 + 15y}{\text{LCD}} = \frac{27}{\text{LCD}} \Rightarrow$$

$$-19 + 15y = 27$$

$$15y = 46$$

$$y = \frac{46}{15}$$

## §2.3 word Problems

Pg 91 Blueprint

$$\text{Sales Price w/ tax} = \text{Price Tag} + \text{Tax}$$

$$\text{Discount Price} = \text{Price Tag} - \text{Discount}$$

\$30                      x                      - .07x

Most of us are used to calculating the price + tax or Discount Price

What messes us up is backtracking to original price, given what you paid @ checkout.

Trick x = thing that's unknown.  
Putting x in right place is key.

John paid \$30 for sneakers that were 7% off. What was the original price?

~~\$32.10~~ ~~YES!~~ NO!  
\$34.29

\$27.90

\$42.00

\$32.24

$$30 = x - .07x = .93x$$

$$x = \frac{30}{.93} \approx \$32.26$$

Price w/ tax of 6% is \$30. What's the sale price?

x = sale price (\$)

~~$$30 - .06(30)$$~~

$$30 = x + .06x = x(1 + .06)$$

$$30 = 1.06x$$

$$\$28.30 \approx \frac{30}{1.06} = x$$

wrong!

$$30 - .06(30) =$$

Let

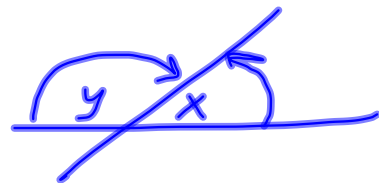
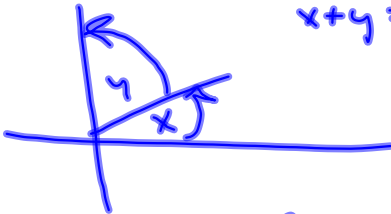
7% discount of \$30 price tag  
 $30 - .07(30)$

### Triangles

Supplementary Angles:

Complementary Angle

$$x + y = 90^\circ$$



$$x + y = 180^\circ$$

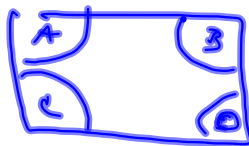
Sum of interior angles is ...

Triangle:



$$A + B + C = 180^\circ$$

Rectangle



$$A + B + C + D = 360$$

§ 2.3 #s  $\underbrace{1-11}_{\text{ODDS}}, 12, 13, 14, \underbrace{17-27}_{\text{ODDS}}, 35, 36, 41, 49$


§ 2.4 #s 1-64 ODDS

#s 13-29 graph, set notation, interval notation

#s 31-45 sets, interval

#s 47-55 These are "AND" situations

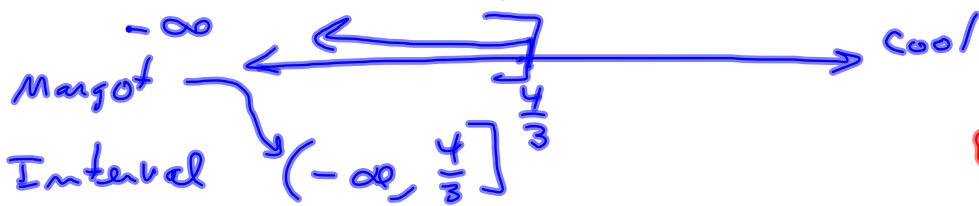
 Do graphs as in class, interval & set notation  
**INTERSECTION** answers

 #s 59-64 These are "OR" situations  
graphs, intervals, sets  
**UNION**

Solve  $3x + 2 \leq 6$  ✓

$$\frac{-2 = -2}{3x \leq 4} \quad \checkmark$$

Set notation  $\left\{ x \mid x \leq \frac{4}{3} \right\}$  ✓



$$3x + 2 < 6$$

$$\left\{ x \mid x < \frac{4}{3} \right\}$$



$$\left( -\infty, \frac{4}{3} \right)$$

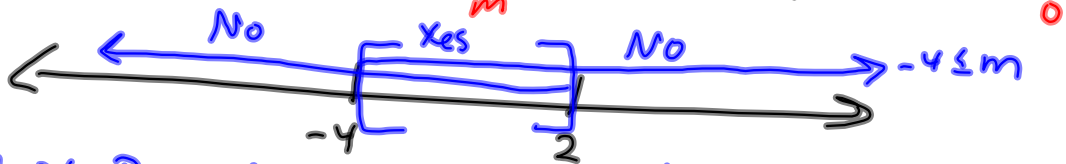


$$5x < 10 \quad \text{and} \quad 3x + 4 < -8$$

Taylor  $-3 \leq m+1 \leq 3$  is an "and" stitch.  
 $-1 = -1 = -1$

$$\{m \mid \underline{-4 \leq m \leq 2}\}$$

This is  $-4 \leq m$  and  $m \leq 2$



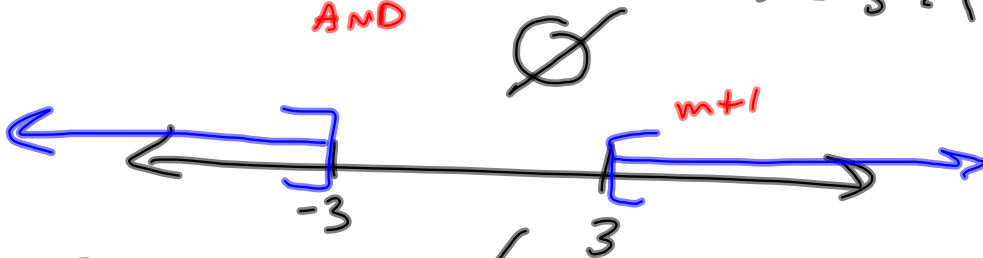
AND: BOTH MUST BE SATISFIED

$$[-4, 2]$$

$$-3 \geq m+1 \geq 3$$

AND

$$-3 \geq 3 \quad !?$$



EMPTY  
SOLUTION  
SET.

"OR" situation

$$5x+1 \leq -4 \quad \text{OR} \quad 5x+1 \geq 4$$

Tempted to WRITE

$$-4 \geq 5x+1 \geq 4$$

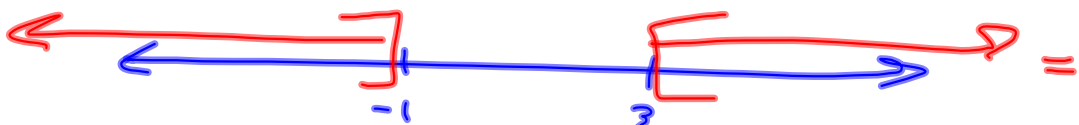
Lies! Don't Do It!

$$\begin{array}{r} 5x+1 \leq -4 \\ -1 = -1 \\ \hline 5x \leq -5 \end{array}$$

$$\begin{array}{r} 5x+1 \geq 4 \\ -1 = -1 \\ \hline 5x \geq 3 \end{array}$$

Touche *cheyenne*

$$\left\{ x \mid x \leq -\frac{5}{5} = -1 \quad \text{OR} \quad x \geq \frac{3}{5} \right\} =$$



$$(-\infty, -1] \cup [3/5, \infty)$$

§ 2.3, 2.4 Due Monday, end of class.

§ 2.5

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

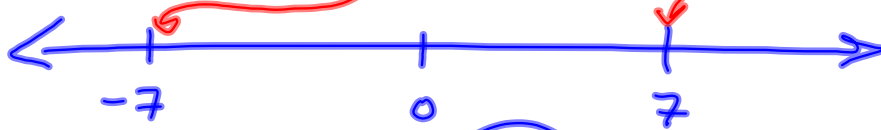
$$|3| = 3$$

$$|-3| = -(-3) = +3$$

$$|3x + 1| = 7$$

$3x+1$  is 7 units from 0.

$3x+1$  is here or here



$$3x + 1 = -7$$

$$-1 = -1$$

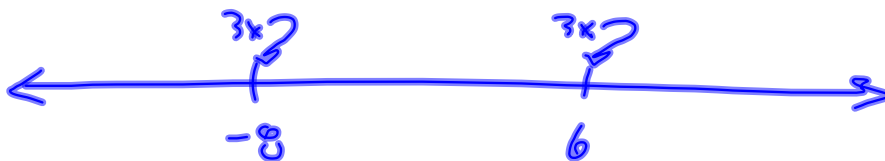
$$3x = -8$$

OR

$$3x + 1 = +7$$

$$-1 = -1$$

$$3x = 6$$



$$\frac{3x}{3} = -\frac{8}{3}$$

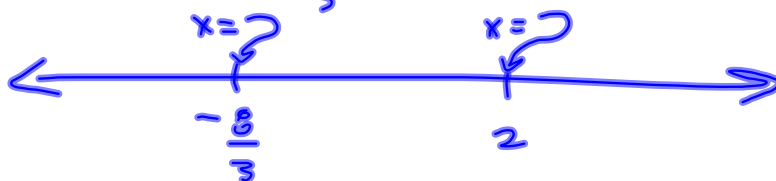
OR

$$\frac{3x}{3} = \frac{6}{3}$$

$$x = -\frac{8}{3}$$

OR

$$x = 2$$



Shortcut (Advise Against)

$$(3x+1) = 7 \Rightarrow$$

$$3x+1 = \pm 7$$

$$3x = -1 \pm 7 \quad \begin{matrix} \nearrow \frac{6}{3} = 2 \\ \searrow \frac{-8}{3} \end{matrix}$$

$$x = \frac{-1 \pm 7}{3}$$

Last word on § 2.4:

$$7 - 5x < 2$$

$$-5x < -5$$

$$\frac{-5x}{-5} > \frac{-5}{-5}$$

$$x > \frac{-5}{-5} = 1$$

$$7 - 5x < 2 \quad \leftarrow$$

$$\frac{-5x}{-5} \leq \frac{-5}{-5} \quad \leftarrow$$

$$x \geq 1 \quad \leftarrow$$

$$7 - 5x < 2$$

$$-5x < -5$$

$$x > 1$$

$$3 < 5$$

$$-3 > -5$$

See?!

$$\frac{-5}{-5} > \frac{-5}{-5}$$