3) $13-4i$

6) $\sqrt{5}-2$

9) $7+4i$

12) $-13-i$

15) $5-10i$

18) $5i$

30) 61

33) $\frac{2}{5}-\frac{1}{5}i$

36) $\frac{1}{3}-\frac{2}{3}i$

39) $\frac{7}{5}-\frac{1}{5}i$

41) $-1\pm 2i$

42) $-\frac{1}{6}\pm\frac{\sqrt{23}}{6}i$

$a+bi$

$i=\sqrt{-1}$

$i^2=-1$

Aug 31-10:55 AM

9) $(2+3i)(2-i)$

$(2)(2)+(-2i)+6i-3i^2$

$4+-2i+6i-3(-1)$

$4+4i+3$

$7+4i$

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33) $\frac{1}{2+i}\ \frac{(2-i)}{(2-i)}$ $\qquad \frac{2-i}{2^2-i^2} = \frac{2-i}{4--1}$

$1^{st}\text{ term}^2 - \text{last term}^2$ $\qquad = \frac{2-i}{5}$

$= \frac{2}{5} - \frac{1}{5}i$

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39) $\frac{(1-i)(2-i)}{1-2i} = \frac{2-i-2i+i^2}{}$ (-1)

$\frac{2-3i-1}{}$

$\frac{1-3i\ (1+2i)}{1-2i\ (1+2i)}$

$\frac{1+2i-3i-6i^2}{1-(2i)^2}$ (2) $\quad -6(-1) = +6$

$\frac{1-i+6}{1-4i^2}$

$\frac{1--4}{5} \quad \frac{7-i}{5}$

$a+bi$

$\frac{7}{5} - \frac{1}{5}i$

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30 $(5-6i)(5+6i)$

$5^2 - (6i)^2$

$25 - 36i^2$

$25 - -36$

$25+36$

61

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Solving Inequalities Algebraically and Graphically

- Solving Absolute Value Inequalities
- Solving Quadratic Inequalities

~These techniques are involved in using a graphing utility to solve inequalities in this textbook

Sections P7:

HW: Pg 58. #'s 3-24 by 3's, 34

Aug 20-7:12 AM

Solving an Absolute Value Equation

Solve

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

less than "AND" $\_ < x < \_$ (,)

$-7 < 2x + 3 < 7$

$-3 \quad -3 \quad -3$

$-10 < 2x < 4$

$-5 < x < 2$

$(-5, 2)$

Aug 20-8:43 AM

Solving an Absolute Value Inequality

Solve

$|x - 4| < 8$

$-8 < x - 4 < 8$

Aug 20-8:43 AM

Solving an Absolute Value Inequality

Solve

$$|3x - 2| \geq 5$$

GREATER THAN "OR"

$x \leq \_\_\_$ OR $x \geq \_\_\_$

$(-\infty,]$ $\cup$ $[, \infty)$

$3x - 2 \leq -5$

$3x \leq -3$

$x \leq -1$

$3x - 2 \geq 5$

$3x \geq 7$

$x \geq \frac{7}{3}$

$x \leq -1$ or $x \geq \frac{7}{3}$

$(-\infty, -1] \cup [\frac{7}{3}, \infty)$

Aug 20-8:43 AM

Solving a Quadratic Inequality

Solve

$$x^2 - x - 12 > 0$$

$(x - 4)(x + 3)$

12

3 4

$x - 4 = 0$ $x + 3 = 0$

$x = 4$ $x = -3$

$(-\infty, -3) \cup (4, \infty)$

Aug 20-8:43 AM

Solving a Quadratic Inequality

Solve

$$2x^2 + 3x \leq 20$$

$[\ ,\ ]$

$\_ \leq x \leq \_$

$2x^2+3x-20 \leq 0$

	x	4
$2x$	$2x^2$	$8x$
-5	$-5x$	-20

$(2)(-20) = -40$

$4 \quad 10$

$5 \quad 8$

$(x+4)(2x-5)$

$x = -4 \quad x = \frac{5}{2}$

$\left[-4, \frac{5}{2}\right]$

Aug 20-8:43 AM

Solving a Quadratic Inequality Graphically

Solve

$$x^2 - 4x \geq -1$$

$x^2-4x+1 \geq 0$

Aug 20-8:43 AM

Projectile Motion

Suppose an object is launched vertically from a point s_0 feet above the ground with an initial velocity of v_0 feet per second. The vertical position s (in feet) of the object t seconds after it is launched is

$$s = -16t^2 + v_0t + s_0.$$

$S = -16t^2 + v_0t + S_0$

S: vertical position

v_0: initial velocity

S_0: initial height

$h = -16t^2 + v_0t + h_0$

Aug 20-1:09 PM

Finding the Height of a Projectile

A projectile is launched straight up from ground level with an initial velocity of 288 ft/sec.

v_0

$S_0 = 0$

When will the projectile's height reach 1152 ft above the ground?

S

$S = -16t^2 + v_0t + s_0$

$1152 = -16t^2 + 288t + 0$

$0 = -16t^2 + 288t - 1152$ mult by -1

$0 = 16t^2 - 288t + 1152$

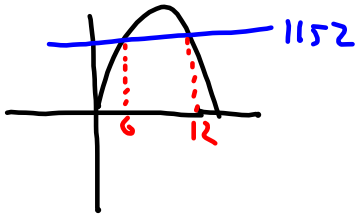
$0 = t^2 - 18t + 72$

$(t-6)(t-12)$

When will the projectile's height be at least 1152 ft above the ground?

$t = 6s$

$t = 12s$



$[6, 12]$

Aug 20-1:15 PM

6) $|3-2x|+2>5$

$-2 \quad -2$

$|3-2x|>3$

$-3<3-2x$ $\qquad$ $3-2x>3$

Aug 31-11:52 AM

3) $(1,5)$

6) $(-\infty,0)\cup(3,\infty)$

9) $[-7,-\frac{3}{2}]$ $\qquad$ $\angle$ AND

12) $(\frac{1}{4},2)$

15) $[-1,0]\cup[1,\infty)$

18) $(-\infty,\frac{3}{4}]\cup[4/3,\infty)$

21) $(-\infty,-1.41]\cup[.08,\infty)$

24) $x=3$

34a) $t=12$ or $t=5$

b) 960ft (5,12)

c) $(0,5]$ or $[12,17)$

Aug 31-2:41 PM

34) $S = -16t^2 + v_0 t + s_0$

$960 = -16t^2 + 272t + 0$

$-960 \qquad -960$

$0 = -16t^2 + 272t - 960$

$0 = t^2 - 17t + 60$

$= (t-5)(t-12)$

$t = 5s \quad t = 12s$

$0 = -16t^2 + 272t$

$16t^2 = 272t$

$t^2 = 17t$

$t = 17$

$\div$ by -16

60

3 20

4 15

-5 -12

b) $(5, 12)$

c) $(0,5] \cup [12,17)$

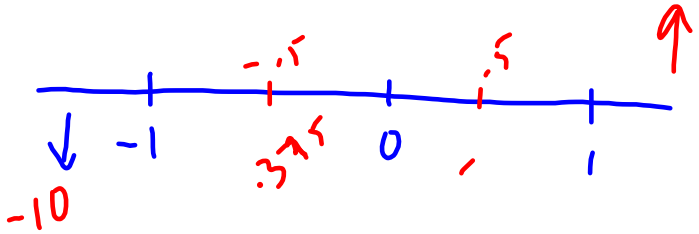
Sep 1-11:25 AM

15) $x^3 - x \geq 0$

$x(x^2 - 1) \geq 0$

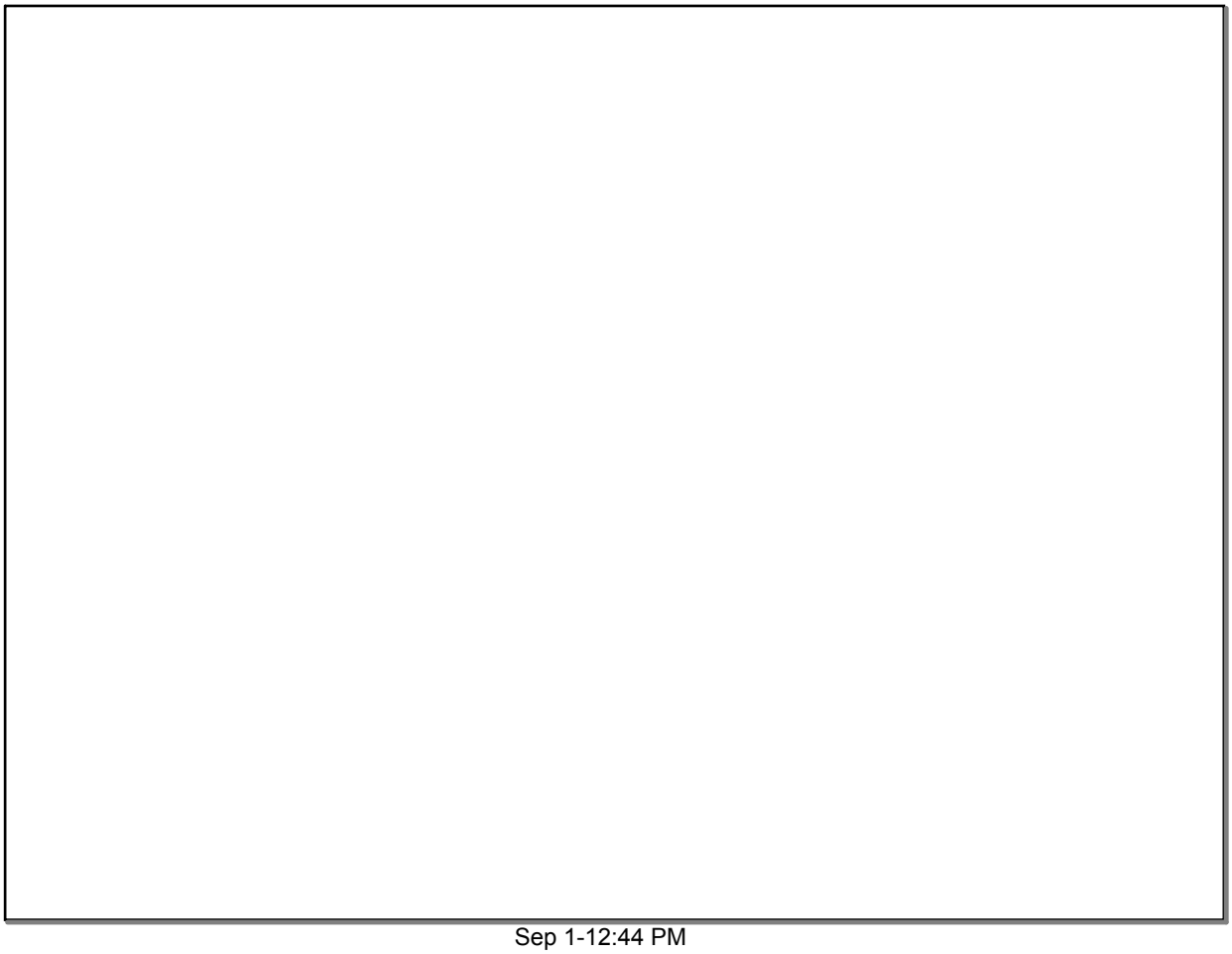
$x(x+1)(x-1)$

$x = 0 \quad x = -1 \quad x = 1$



$[-1, 0] \cup [1, \infty)$

Sep 1-11:35 AM



Sep 1-12:44 PM