

1. Absolute Value Equations

a. $|3x-2|-1=7$
 $|3x-2|=8$
 $3x-2=8$ $-3x+2=8$
 $3x=10$ $-3x=6$
 $x=10/3$ $x=-2$

c. $|-4+5x|=16$
 $-4+5x=16$ $4-5x=16$
 $5x=20$ $-5x=12$
 $x=4$ $x=-12/5$

b. $|2x+3|+8=17$
 $|2x+3|=9$
 $2x+3=9$ $-2x-3=9$
 $2x=6$ $-2x=12$
 $x=3$ $x=-6$

d. $3|-8x|+8=80$
 $3|-8x|=72$
 $|-8x|=24$
 $-8x=24$ $8x=24$
 $x=-3$ $x=3$

2. Absolute Value Inequalities

a. Solve and graph the solution
 $|2x-3|<7$
 $2x-3<7$ $-2x+3<7$
 $2x<10$ $-2x<4$
 $x<5$ $x>-2$

b. Solve and graph the solution
 $|3x+1|\geq 7$
 $3x+1>7$ $-3x-1>7$
 $3x>6$ $-3x>8$
 $x>2$ $x<-8/3$

c. Solve and graph the solution

The only
 $3-|8x-6|\geq 3$
 $|8x-6|\leq 0$ $-|8x-6|\geq 0$
 $8x-6\leq 0$ $-8x+6\leq 0$ $-8x\leq -6$
 $8x\leq 6$ $x\geq 6/8$
 $x\leq 6/8$

d. Solve and graph the solution

$3|3-5r|-3<18$
 $|3-5r|<7$
 $3-5r<7$ $3-5r>-7$
 $-5r<4$ $-5r>-10$
 $r>-4/5$ $r<2$

3. 2 Variable System of Equations

a. Find the solution of the system

$2(2x+y=-7)$
 $x-2y=4$
 $4x+2y=-14$
 $5x=-10$
 $x=-2$

$-2-2y=4$
 $-2y=6$
 $y=-3$

$(-2, -3)$

b. Find the solution of the system

$3x+4y=11$
 $-2(5x+2y=-5)$
 $3x+4y=11$
 $-10x-4y=10$
 $-7x=21$
 $x=-3$

$3(-3)+4y=11$
 $-9+4y=11$
 $4y=20$
 $y=5$

$(-3, 5)$

4. Operations on Polynomials

a. Simplify the expression

$$2(3x^2 - 7) - 2(4x^2 - 3x + 4)$$

$$6x^2 - 14 - 8x^2 + 6x - 8$$

$$-2x^2 + 6x - 22$$

b. Simplify the expression

$$3x(4x^2 - 5) - 3(5x^2 + 3x - 2)$$

$$12x^3 - 15x - 15x^2 - 9x + 6$$

$$12x^3 - 15x^2 - 24x + 6$$

5. Factor a Quadratic with a=1

a. $x^2 + 4x - 21$

$$(x+7)(x-3)$$

b. $x^2 - 5x + 6$

$$(x-3)(x-2)$$

6. Factor a Quadratic with $a \neq 1$

a. $8x^2 + 2x - 15$

$$(4x-5)(2x+3)$$

b. $2x^2 + 8x + 6$

$$2(x^2 + 4x + 3)$$

$$2(x+3)(x+1)$$

7. Solve a quadratic by factoring, square roots, completing the square or quadratic formula

a. $2x^2 + 7x - 4 = 0$

$$(2x-1)(x+4)$$

$$x = 1/2 \quad x = -4$$

b. $4x^2 - 64 = 0$

$$4(x^2 - 16)$$

$$4(x-4)(x+4) = 0$$

$$x = 4 \quad x = -4$$

c. $x^2 + 8x = 4$

$$x^2 + 8x - 4 = 0$$

$$\frac{-8 \pm \sqrt{64 - 4(1)(-4)}}{2(1)}$$

$$\frac{-8 \pm \sqrt{64 + 16}}{2} =$$

$$\frac{-8 \pm \sqrt{80}}{2}$$

$$\frac{-8 \pm 4\sqrt{5}}{2}$$

$$-4 \pm 2\sqrt{5}$$

8. Solve a quadratic using the quadratic formula

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

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

$$\frac{-1 \pm \sqrt{1 + 16}}{2}$$

$$2$$

$$\frac{-1 \pm \sqrt{17}}{2}$$

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

$$\frac{-3 \pm \sqrt{9 + 8}}{2}$$

$$2$$

$$\frac{-3 \pm \sqrt{17}}{2}$$

$$2$$

b. $x^2 + 3x - 2 = 0$