HW #10 - due Fri, 10/2
5.7 #35-75odd Solving equations by factoring

HW #11 - due Mon, 10/5
6.1 #39-79 odd Simplifying rational expressions

HW #12 - due Fri, 10/8
6.2 #3-95 odd Operations on rational expressions
6.6 #5-25 odd Literal Equations

Test 4
Tues
10/20

HW #13 - due Wed.
7.1 #39-73 odd, 85-113 odd, 125-149 odd Rational Exponents and Radical Expressions

HW #14
7.2 #11-21 odd, 43-51 odd, 57-65 odd, 85-91 odd, 97-103 odd,113-121 odd Operations on Radical Expressions
8.2 #59-69 odd Quadratic Equations
6.3 #17,23,25,33,41,43 Complex Fractions
6.4 #19,25,29,31 Rational Equations

68. $4p^2 - 7p = -3$

$\frac{7 \pm \sqrt{-7^2 - 4(4)(3)}}{2(4)}$

$\frac{7 \pm \sqrt{49-48}}{8}$

$(7 \pm \sqrt{1})/8$

$\frac{7 \pm 1}{8}$

$\frac{7+1}{8}, \frac{7-1}{8}$

$\frac{8}{8} = 1, \frac{6}{8} = \frac{3}{4}$

If $ax^2 + bx + c = 0$,
then $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$x = \{3/4, 1\}$

$x = 3/4, 1$

$x^2 + x + 2 = 0$

If $ax^2+bx+c=0$, then $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$a=1, b=1, c=2$

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

$= \frac{-1 \pm \sqrt{1-8}}{2}$

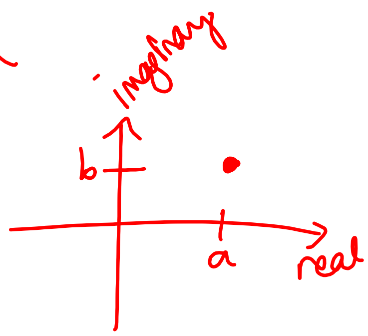
$= \frac{-1 \pm \sqrt{-7}}{2} = -\frac{1}{2} \pm \frac{\sqrt{7}}{2} i$

complex #'s

$a+bi$, $a, b \in \mathbb{R}$

real part, imaginary part

$i = \sqrt{-1}$



$\sqrt{-9} = \sqrt{(-1)(9)} = \sqrt{-1} \cdot \sqrt{9} = i \cdot 3$

$= 3i$

$\sqrt{-50} = \sqrt{(-1)(5)^2 \cdot 2} = \sqrt{-1} \cdot \sqrt{5^2} \cdot \sqrt{2}$

$= i \cdot 5 \cdot \sqrt{2}$

$= \boxed{5i\sqrt{2}} = (5\sqrt{2})i$

$i = \sqrt{-1}$

$i^2 = -1$

$(3+2i)(3-5i) = 9 - 15i + 6i - 10i^2$

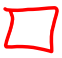
$= 9 - 9i - 10(-1)$

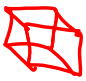
$= 9 - 9i + 10 = \boxed{19 - 9i}$

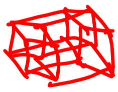
$$(3-2i)(4+5i)$$
$$= 12 + 15i - 8i - 10i^2$$
$$= 12 + 7i - 10(-1)$$
$$= 12 + 7i + 10$$
$$= \boxed{22 + 7i}$$

• 0-dim

1-dim

 2-dim

 3-dim

 4-dim

Subtract and simplify. State the values which are not in the domain for each variable.

$$\frac{2x-1}{x-4} - \frac{x^2-10x-7}{x^2+x-20} = \frac{(2x-1)}{(x-4)} \cdot \frac{(x+5)}{(x+5)} - \frac{x^2-10x-7}{(x+5)(x-4)}$$

$$= \frac{2x^2+10x-x-5}{(x-4)(x+5)} - \frac{x^2-10x-7}{(x+5)(x-4)}$$

$$= \frac{2x^2+10x-x-5-(x^2-10x-7)}{(x-4)(x+5)}$$

$$= \frac{2x^2+9x-5-x^2+10x+7}{(x-4)(x+5)}$$

$$= \boxed{\frac{x^2+19x+2}{(x-4)(x+5)},\ x \neq 4, -5}$$

Simplify:
$$\frac{x^2-12}{\underset{(x^2-4)(x^2+4)}{x^4-16}} + \frac{1}{x^2-4} - \frac{1}{x^2+4}$$

$$\frac{x^2-12}{(x^2-4)(x^2+4)} + \frac{1}{x^2-4} \cdot \frac{x^2+4}{x^2+4} - \frac{1}{x^2+4} \cdot \frac{x^2-4}{x^2-4}$$

$$= \frac{x^2-12+x^2+4-x^2+4}{(x^2-4)(x^2+4)}$$

$$= \frac{x^2-4}{\underset{(x-2)(x+2)}{(x^2-4)}(x^2+4)} = \boxed{\frac{1}{x^2+4},\ x \neq -2, 2}$$

6.3 Complex Fractions

6. $$\frac{\left(1+\frac{1}{x}\right)}{\left(1-\frac{1}{x^2}\right)} = \frac{1\cdot\frac{x}{x}+\frac{1}{x}}{1\cdot\frac{x^2}{x^2}-\frac{1}{x^2}} = \frac{\left(\frac{x+1}{x}\right)}{\left(\frac{x^2-1}{x^2}\right)} =$$

$$= \frac{x+1}{x}\cdot\frac{x^2}{x^2-1} = \frac{\cancel{x+1}}{\cancel{x}^{1}}\cdot\frac{x^{\cancel{2}\,1}}{(x-1)\cancel{(x+1)}}$$

$$= \boxed{\frac{x}{x-1},\ x\neq -1,0,1}$$

16. $$\frac{\left(\frac{x}{x+1}-\frac{1}{x}\right)}{\left(\frac{x}{x+1}+\frac{1}{x}\right)} = \frac{\frac{x}{x+1}\cdot\frac{x}{x}-\frac{1}{x}\cdot\frac{x+1}{x+1}}{\frac{x}{x+1}\cdot\frac{x}{x}+\frac{1}{x}\cdot\frac{x+1}{x+1}}$$

$$= \frac{\left(\frac{x^2-(x+1)}{x(x+1)}\right)}{\left(\frac{x^2+x+1}{x(x+1)}\right)} = \frac{x^2-x-1}{\cancel{x(x+1)}}\cdot\frac{\cancel{x(x+1)}}{x^2+x+1}$$

$$= \boxed{\frac{x^2-x-1}{x^2+x+1},\ x\neq 0,-1}$$

22.
$$\frac{1-\frac{3}{x}-\frac{10}{x^2}}{1+\frac{11}{x}+\frac{18}{x^2}} = \frac{\frac{x^2}{x^2}-\frac{3x}{x^2}-\frac{10}{x^2}}{\frac{x^2}{x^2}+\frac{11x}{x^2}+\frac{18}{x^2}}$$

$$=\frac{\left(\frac{x^2-3x-10}{x^2}\right)}{\left(\frac{x^2+11x+18}{x^2}\right)} = \frac{x^2-3x-10}{\cancel{x^2}}\cdot\frac{\cancel{x^2}}{x^2+11x+18}$$

$$=\frac{(x-5)\cancel{(x+2)}}{(x+9)\cancel{(x+2)}} = \boxed{\frac{x-5}{x+9},\ x\neq -9,-2,0}$$

34.
$$\frac{\frac{y}{y+2}-\frac{y}{y-2}}{\frac{y}{y+2}+\frac{y}{y-2}} = \frac{\left(\frac{y(y-2)-y(y+2)}{(y-2)(y+2)}\right)}{\left(\frac{y(y-2)+y(y+2)}{(y-2)(y+2)}\right)}$$

$$=\frac{y^2-2y-y^2-2y}{\cancel{(y-2)}\cancel{(y+2)}}\cdot\frac{\cancel{(y-2)}\cancel{(y+2)}}{y^2-2y+y^2+2y}$$

$$=\frac{-4y}{2y^2}=\boxed{\frac{-2}{y},\ y\neq 0,-2,2}$$

40. $1-\dfrac{1}{\left(1-\frac{1}{b-2}\right)}$

$= 1-\dfrac{1}{\left(\frac{b-2}{b-2}-\frac{1}{b-2}\right)}$

$= 1-\dfrac{1}{\left(\frac{b-3}{b-2}\right)}$

$= 1-\dfrac{b-2}{b-3} = \dfrac{b-3}{b-3}-\dfrac{b-2}{b-3} = \boxed{\dfrac{-1}{b-3} \quad b \neq 3, 2}$