1. Solve $5x+3=9x-7+2x$

$=\frac{5}{3}$

2. Solve $\frac{3}{x^2-3x}+\frac{4}{x}=\frac{1}{x-3}$

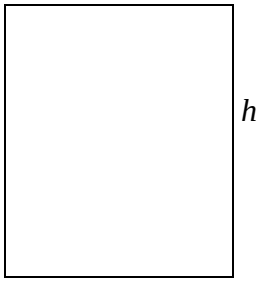
When you solve you get $x=3$, which does not check.
Answer: no solution

3. Solve for w: $P=2l+2w$

$w=\frac{P-2l}{2}$

4. A picture frame has a total perimeter of 21 feet. The width is $\frac{3}{4}$ of the height. Find the dimensions of the picture frame.

$w=\frac{3}{4}h$



First find the perimeter in terms of *h*.

$$P=2h+2w$$
$$=2h+2(\frac{3}{4}h)$$
$$=2h+\frac{3}{2}h$$
$$=\frac{4}{2}h+\frac{3}{2}h=\frac{7}{2}h$$

Now since we know that the perimeter is 21 feet we have

$$\frac{7}{2}h=21$$
$$h=\frac{2}{7}(21)$$
$$h=6$$

Then $w=\frac{3}{4}h=\frac{3}{4}(6)=\frac{9}{2}$ Answer: Height = 6 ft, width = $\frac{9}{2}$ ft

5. Simplify and write the result in standard form $(11-5i)-(-4+3i)$

$15-8i$

6. Simplify and write the result in standard form $(\frac{3}{5}-\frac{5}{6}i)+(\frac{4}{3}+\frac{1}{3}i)$

$\frac{29}{15}-\frac{1}{2}i$

7. Simplify and write the result in standard form $(3-5i)(-2+4i)$

$14+22i$

8. Simplify and write the result in standard form $\frac{2-5i}{1-2i}$

$\frac{12}{5}-\frac{1}{5}i$

9. Solve by factoring $x^2-4x-32=0$

$x=-4,8$

10. Solve by extracting square roots $(3x-1)^2-16=0$

First you have to have $(3x-1)^2$ isolated on one side of the equation: $(3x-1)^2=16$

You now take the square root of each side and insert $\pm$. Essentially you are using the property that if $a^2=16$ then $a=\pm 4$.

$3x-1=\pm 4$

You now solve for x.

$3x=1\pm 4$

$x=\frac{1\pm 4}{3}$

When you get an answer of this form that does not involve a radical then you write the separate solutions:

$x=\frac{1-4}{3},\frac{1+4}{3}$

$x=-1,\frac{5}{3}$

11. Solve using the quadratic formula $2x^2-7=-6x$

$x=\frac{-3\pm\sqrt{23}}{2}$

12. Solve using the quadratic formula $x^2+4x+13=0$

$x=-2\pm 3i$

13. Solve using the quadratic formula $4x^2+25=20x$

$x=\frac{5}{2}$

14. Solve $x^4-x^2-20=0$

First note that $(x^2)^2=x^4$, making the equation $(x^2)^2-x^2-20=0$

If you put a in place of x^2: $a^2-a-20=0$

You can now solve this by factoring

$(a-5)a+4)=0$

$a=5,-4$

Since we put a in place of x^2 we now have

$x^2=5$ or $x^2=-4$

You now take the square root of each side and insert $\pm$. Remember that the square root of a negative number is imaginary.

$x=\pm\sqrt{5},\ \pm 2i$

15. Solve $6\left(\frac{t}{t+2}\right)^2-13\left(\frac{t}{t+2}\right)+6=0$. Hint $6a^2-13a+6=(2a-3)(3a-2)$

$t=-6,4$

16. Solve $\sqrt{5x-26}=x-4$

$x=6,7$ (Both answers check)

17. Solve $\frac{6}{x+2}-\frac{5}{x+4}=1$

$x=1,-6$ (Both answers check)