Write a polynomial function in standard form with the given zeros.

1.
$$x=2,1$$

 $x=2$ or $x=1$
 $x-2=0$ or $x-1=0$
 $(x-2)(x-1)=0$
 $x=-1,\frac{3}{2}$
 $x=-1$ or $x=\frac{3}{2}$
 $x=-1$ or $x=\frac{3}{2}$

2.
$$x = -1, \frac{3}{2}$$

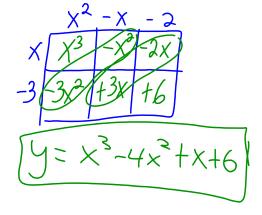
 $x = -1$ or $x = \frac{3}{2}$
 $x + 1 = 0$ $2x = 3$
 $2x - 3 = 0$
 $2x^2 - x - 3 = 0$
 $x = -1, \frac{3}{2}$
 $2x = -3$
 $2x = -3$
 $2x^2 - x - 3 = 0$

3.
$$x = -1,2,3$$

 $X = -1$ or $X = 2$ or $X = 3$
 $X + 1 = 0$ of $X - 2 = 0$ of $X - 3 = 0$
 $(X + 1)(X - 2)(X - 3) = 0$
 $(X^2 - X - 2)(X - 3) = 0$

3.
$$x=-1,2,3$$
 $X=-1$ or $X=2$ or $X=3$
 $X+1=0$ of $X-2=0$ of $X-3=0$
 $(X+1)(X-2)(X-3)=0$
 $(X^2-X-2)(X-3)=0$

4. $x=0,0,3,4$
 $y=X^2(X-3)(X-4)$
 $y=X^2(X^2-7x+12)$
 $y=X^2(X^2-7x+12)$
 $y=X^2(X^2-7x+12)$



How do you factor $x^4 - 3x^2 + 2$?

How do you factor x^2-3x+2 ? factor it

Do you see a similarity? Do you see that the middle term's exponent is half of the leading terms's exponent?

What if you made a substitution?

$$x^2 = m$$
 $x_1^4 - 3x_2^2 + 2$
 $(x^2)^2 - 3(x) + 2$
then you get: $m^2 - 3m + 2$

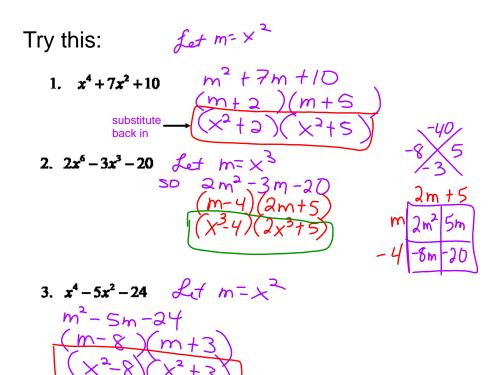
and can you factor that? it is the same as the one above.....except that you made the substitution....now substitute back and solve.

$$(m-2)(m-1)$$

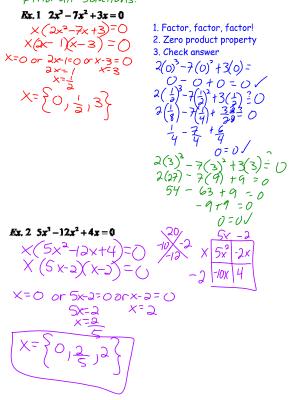
 $(x^2-2)(x^2-1)$

but...are we done? do you see the difference of squares?

What is the final answer? $(x^2-2)(x^2-1) = (x^2-2)(x+1)(x-1)$



Find the real or imaginary solutions of each equation by factoring. Find all Solutions.



Find the real or imaginary solutions of each equation by factoring.

$$\begin{cases} (x^{2}-5)(x^{2}+3)=0 \\ (x^{2}-5)(x^{2}-5)(x^{2}+3)=0 \\ (x^{2}-5)(x^{2}-5)(x^{2}-5)=0 \\ (x^{2}-5)(x^{2}-$$

Find the real or imaginary solutions.

Ex 5
$$\frac{2}{3}$$
-8=0
(x) -(2) (x2+2x+4) = 0
x-2=0 or $\frac{2}{3}$ +2x+4 = 0
x=2 $\frac{2}{3}$ +2x+4 = 0
(x+1) = -3
 $\frac{2}{3}$ +1= \frac{1}{2} \fr

Find the real or imaginary solutions of each equation.

Ex. 7
$$x^4 - 16 = 0$$
 Use subst or factor directly.

Let $m = x^2$
 $m^2 - 16 = 0$
 $(m + 4)(m - 4) = 0$

Subst back in $(x^2 + 4)(x^2 - 4) = 0$
 $(x^2 + 4)(x^2 + 4)(x^2 - 4) = 0$
 $(x^2 + 4)(x^2 + 4)(x^$