If the x-intercepts of a parabola are -9 and 5 what

factors did they come from?

$(x + 9)(x - 5)$

	x	$+9$
x	x^2	$+9x$
-5	$-5x$	-45

What Quadratic Function did they come from?

$y = x^2 + 4x - 45$

Find the equation of a quadratic, in Standard Form, with the following x-intercepts:

4 and -3

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

$y = x^2 - x - 12$

$y = x^2 - x - 12$ is only one of an infinite # of parabolas that have x-intercepts of 4 and -3.

They all have the form:

$y = a(x-4)(x+3)$

To find the value of a we need one more piece of information.

Find the only parabola that has x-intercepts of -2 and 6 and passes through the point (4,60)

$y = a(x+2)(x-6)$

$60 = a(4+2)(4-6)$

$\frac{60}{-12} = \frac{-12a}{-12}$

$-5 = a$

$y = -5(x+2)(x-6)$

OR $= -5(x^2 - 4x - 12)$

$= -5x^2 + 20x + 60$

Find the equation of a quadratic, in Standard Form, with the following x-intercepts:

$\frac{5}{2}$ and $\frac{-1}{4}$

The parabola passes through the point (1, -45)

$y = a(2x-5)(4x+1)$

$-45 = a(2(1)-5)(4(1)+1)$

$-45 = a(-3)(5)$

$\frac{-45}{-15} = \frac{a(-15)}{-15}$ $\quad a = 3$

$y = 3(2x-5)(4x+1)$

	$2x$	-5
$4x$	$8x^2$	$-20x$
$+1$	$+2x$	-5

$24x^2 - 54x - 15$

Factor each completely:

1. $6x^3 + 9x^2 - 60x$
2. $150x^3 - 294x$
3. $4x^4 - x^2 - 18$

$6x^3 + 9x^2 - 60x = 3x(x+4)(2x-5)$

$3x(2x^2+3x-20)$

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

-40, $+8$, -5, $+3$

$150x^3 - 294x$

$6x(25x^2 - 49)$

$6x(5x \pm 7)$