Factor completely.

$$162x^{11} - 326x^7 + 4x^3$$

GCF $= 2x^3$

$= 2x^3 (81x^8 - 163x^4 + 2)$

$162 \cdot 2 = 324$, $-162 \cdot -1 = 162$, -163

$\Rightarrow$

	x^4	-2
$81x^4$	$81x^8$	$-162x^4$
-1	$-x^4$	$+2$

$= 2x^3 (x^4 - 2)(81x^4 - 1)$ diff of perfect squares

$= 2x^3 (x^4 - 2)(9x^2 + 1)(9x^2 - 1)$ diff of perfect squares

$= \boxed{2x^3 (x^4 - 2)(9x^2 + 1)(3x \pm 1)}$

Factor completely.

$$216x^5 - 486x$$

GCF $= 54x$

$= 54x (4x^4 - 9)$ diff of perfect squares

$= \boxed{54x (2x^2 \pm 3)}$

Factor completely.

$$243x^{12} - 768x^4$$

GCF $= 3x^4$

$= 3x^4 (81x^8 - 256)$ diff. of perfect squares

$= 3x^4 (9x^4 + 16)(9x^4 - 16)$ diff of perfect squares

$= \boxed{3x^4 (9x^4 + 16)(3x^2 \pm 4)}$

Factor completely.

$$\frac{8}{75}x^2 - \frac{18}{48}$$

GCF $= 2/3 \Rightarrow$ 2 from the numerators & 3 from the denominators

$= \frac{2}{3}\left(\frac{4}{25}x^2 - \frac{9}{16}\right)$ difference of perfect squares

$= \boxed{\frac{2}{3}\left(\frac{2}{5}x \pm \frac{3}{4}\right)}$

Factor completely.

$$28x^6 - 63x^5 - 448x^4 + 1008x^3$$

GCF $= 7x^3$

$= 7x^3(4x^3 - 9x^2 - 64x + 144)$

	$4x$	-9
x^2	$4x^3$	$-9x^2$
-16	$-64x$	$+144$

$= 7x^3(4x-9)(x^2-16)$

$= \boxed{7x^3(4x-9)(x\pm4)}$

You can now finish Hwk #11: Sec 5-4

Practice Sheet: Factoring

Due Monday

Factor completely. $\frac{1}{2}x^2 + \frac{5}{24}x - \frac{1}{12}$

This would be easier to factor if there were NO denominators. If this were an equation I could multiply both sides by 24 to cancel the denominators. Since it is an EXPRESSION, the only thing I can multiply it by is the number 1. But I can turn the number 1 into 24/24 and only distribute the numerator.

$\frac{24}{24}\left(\frac{1}{2}x^2 + \frac{5}{24}x - \frac{1}{12}\right)$

$= \frac{1}{24}(12x^2 + 5x - 2)$

FACTOR THIS Trinomial

	-24	
$+8$		-3
	$+5$	

	$3x$	$+2$
$4x$	$12x^2$	$+8x$
-1	$-3x$	-2

$= \boxed{\frac{1}{24}(3x+2)(4x-1)}$