

In PreCalculus, there is a considerable amount of factoring, BUT we will have to factor expressions that look like these:

- a.  $\cos^2 x - \sin^2 x \cdot \cos^2 x$  ... *greatest common factor*
- b.  $\sec^4 x - \tan^4 x$  ... *a difference of two squares*
- c.  $2 \cos^2 x - 9 \cos x - 5$  ... *a "quadratic-style" trinomial expression*

So, let's practice basic factoring first!

Factor the following completely.

1. $5x^2 - x$ $x(5x - 1)$	2. $7y^3 + 14y^2$ $7y^2(y + 2)$
3. $9x^3y^2 - 6x^2y^3 + 3x^3y^3$ $3x^2y^2(3x - 2y + xy)$	4. $x^2 - 16$ $(x + 4)(x - 4)$
5. $a^2 - 81b^2$ $(a + 9b)(a - 9b)$	6. $6x^4 - 6y^4$ $6(x^4 - y^4)$ $6(x^2 - y^2)(x^2 + y^2)$ $6(x + y)(x - y)(x^2 + y^2)$
7. $w^2 - 14w + 45$ $(w - 9)(w - 5)$	8. $x^2 + 2x - 24$ $(x + 6)(x - 4)$
9. $r^4 + 12r^2 + 20$ $(r^2 + 10)(r^2 + 2)$	10. $k^2 - k - 20$ $(k - 5)(k + 4)$
11. $2x^2 + 5x + 3$ $(2x + 3)(x + 1)$	12. $5x^2 - 17x + 6$ $(5x - 2)(x - 3)$
13. $2x^2 - 9x - 5$ $(2x + 1)(x - 5)$	14. $\underbrace{x^3 + x^2}_{x^2(x+1)} + \underbrace{x + 1}_{1(x+1)}$ $x^2(x+1) + 1(x+1)$ $(x^2 + 1)(x + 1)$
15. $\underbrace{x^3 + 2x^2 - x - 2}_{x^2(x+2) - 1(x+2)}$ $x^2(x+2) - 1(x+2)$ $(x^2 - 1)(x + 2)$ $(x + 1)(x - 1)(x + 2)$	16. $3x^2 - 5x - 2$ $(3x + 1)(x - 2)$
17. $x^3y + 2x^2y$ $x^2y(x + 2)$	18. $x^4 + x^2 - 42$ $(x^2 + 7)(x^2 - 6)$