

Factor each polynomial completely:

Answers

1. $15x^2 - 30x$

$15x(x-2)$

(take out lowest power variable, and both numbers have 15 as factor)

2. $ax^2 + ay^2$

$a(x^2 + y^2)$

(can't factor sum of squares)

3. $36mn - 9m^2n^2$

$9mn(4 - mn)$

4. $x^3 - 5x^2 - 25x + 125$

$x^2(x-5) - 25(x-5)$

$(x-5)(x^2 - 25)$

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

OR $(x-5)^2(x+5)$

* sign change, took out negative

5. $t^4 + 7t^2 - 3t^3 - 21t$

$t^2(t^2 + 7) - 3t(t^2 + 7)$

$(t^2 + 7)(t^2 - 3t)$

$t(t-3)(t^2 + 7)$

6. $x^2 + 7x + 6$

$(x+6)(x+1)$

$6 \cdot 1 = 6 \checkmark$
 $6 + 1 = 7 \checkmark$

7. $64 - 27w^3$

$4 \cdot 4 \cdot 4$ $3w \cdot 3w \cdot 3w$

$(4-3w)(16+12w+9w^2)$

little big
one of each two of each
 $4(3w)$

8. $x^2 - 2x - 15$

$(x-5)(x+3)$

$-5 \cdot 3 = -15 \checkmark$
 $-5 + 3 = -2 \checkmark$

9. $20x^2 - 25x + 5$

$5(4x^2 - 5x + 1)$

$5(4x-1)(x-1)$

Since 1 can only be $1 \cdot 1$, and $-4 + (-1) = -5$

10. $t^3 - 27$

$t \cdot t \cdot t$ $3 \cdot 3 \cdot 3$

$(t-3)(t^2 + 3t + 9)$

$3 \cdot t$

11. $x^8 - 8x^5 + 16x^2$

$x^2(x^6 - 8x^3 + 16)$

prime!
NOT in correct form

12. $49x^2 - 81$

$(7x-9)(7x+9)$

$7x \cdot 7x = 49x^2 \checkmark$
 $9 \cdot 9 = 81 \checkmark$

13. $8x^3 - 50x$

$2x(4x^2 - 25)$
 $2x(2x-5)(2x+5)$

Diff squares!