

Factor, Factor, Factor

1. Factor the greatest common factor from each term in the expression.

- a. $9x^2 - 12x$
- b. $32x^2yz^3 + 48x^3yz$

2. Factor by grouping.

- a. $x^3 + 4x^2 - 3x - 12$
- b. $x^3 + 3x^2 + x + 3$
- c. $x^3 - 3x^2 + 2x - 6$
- d. $2x^2 - 8x + 3xy - 12y$
- e. $x^2 - bx - ax + ab$

3. Factor. If a polynomial cannot be factored, state "Not factorable".

- a. $x^2 - 64$
- b. $9x^2 - 25$
- c. $100x^2 - 81y^2$
- d. $x^3 - 27$ RECALL: $(a^3 - b^3) = (a - b)(a^2 + ab + b^2)$
- e. $x^3 + 8$ RECALL: $(a^3 + b^3) = (a + b)(a^2 - ab + b^2)$
- f. $x^2 + 5x + 6$
- g. $x^2 - 13x + 36$
- h. $x^2 + 5x - 24$
- i. $x^2 - 17x - 60$
- j. $x^2 - 8x - 15$
- k. $x^2 + 9x + 14$
- l. $x^2 - 18x + 80$
- m. $x^2 + 14x - 24$
- n. $x^2 - 3x + 11$ *
- o. $x^2 - 2x - 99$
- p. $x^2 + 9x + 14$
- q. $x^2 - 8x + 7$
- r. $x^2 + 2x - 35$
- s. $x^2 - 12x + 35$
- t. $x^2 - 6x - 16$

4. Factor. If a polynomial cannot be factored, state "Not factorable".

- a. $x^3 + 8x^2 + 16x$
- b. $3x^2 + 6x - 24$

- c. $7x^2 - 42x + 35$
- d. $2x^2 + 11x + 5$
- e. $5x^2 - 2x + 3$
- f. $6x^2 + 28x - 10$
- g. $8x^2 - 8xy - 6y^2$
- h. $9x^2 + 6x - 8$
- i. $14x^2 + 19x - 3$
- j. $15x^2 - 19x - 10$
- k. $35x^2 + 34x + 8$

Solutions

- 1. a. $3x(3x - 4)$
b. $16x^2yz(2z^2 + 3x)$
- 2. a. $(x^2 - 3)(x + 4)$
b. $(x^2 + 1)(x + 3)$
c. $(x - 3)(x^2 + 2)$
d. $(x - 4)(2x + 3y)$
e. $(x - b)(x - a)$
- 3. a. $(x - 8)(x + 8)$
b. $(3x - 5)(3x + 5)$
c. $(10x - 9y)(10x + 9y)$
d. $(x - 3)(x^2 + 3x + 9)$
e. $(x + 2)(x^2 - 2x + 4)$
f. $(x + 2)(x + 3)$
g. $(x - 4)(x - 9)$
h. $(x - 3)(x + 8)$
i. $(x + 3)(x - 20)$
j. Not factorable.
k. $(x + 7)(x + 2)$
l. $(x - 10)(x - 8)$
m. Not factorable.
n. Not factorable.
o. $(x - 11)(x + 9)$
p. $(x + 7)(x + 2)$
q. $(x - 1)(x - 7)$
r. $(x - 5)(x + 7)$
s. $(x - 5)(x - 7)$
t. $(x - 8)(x + 2)$

4. a. $x(x + 4)^2$
b. $3(x - 2)(x + 4)$
c. $7(x - 1)(x - 5)$
d. $(2x + 1)(x + 5)$
e. $(5x - 3)(x - 1)$
f. $2(3x - 1)(x + 5)$
g. $2(2x + y)(2x - 3y)$
h. $(3x - 2)(3x + 4)$
i. $(7x - 1)(2x + 3)$
j. $(5x + 2)(3x - 5)$
k. $(7x + 4)(5x + 2)$