Factoring Quadratic Expressions Trinomials

Factor each completely.

1) $x^2 - 7x - 18$

2) $p^2 - 5p - 14$

3) $m^2 - 9m + 8$

4) $x^2 - 16x + 63$

5) $7x^2 - 31x - 20$

6) $7k^2 + 9k$

7) $7x^2 - 45x - 28$

8) $2b^2 + 17b + 21$

9) $5p^2 - p - 18$

10) $28n^4 + 16n^3 - 80n^2$

11) $3b^3 - 5b^2 + 2b$

12) $7x^2 - 32x - 60$

13) $30n^2b - 87nb + 30b$

14) $9r^2 - 5r - 10$

15) $9p^2r + 73pr + 70r$

16) $9x^2 + 7x - 56$

17) $4x^3 + 43x^2 + 30x$

18) $10m^2 + 89m - 9$

Critical thinking questions:

19) For what values of b is the expression factorable?
$x^2 + bx + 12$

20) Name four values of b which make the expression factorable:
$x^2 - 3x + b$

ANSWERS

1) $x^2 - 7x - 18$

$(x - 9)(x + 2)$

2) $p^2 - 5p - 14$

$(p + 2)(p - 7)$

3) $m^2 - 9m + 8$

$(m - 1)(m - 8)$

4) $x^2 - 16x + 63$

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

5) $7x^2 - 31x - 20$

$(7x + 4)(x - 5)$

6) $7k^2 + 9k$

$k(7k + 9)$

7) $7x^2 - 45x - 28$

$(7x + 4)(x - 7)$

8) $2b^2 + 17b + 21$

$(2b + 3)(b + 7)$

9) $5p^2 - p - 18$

$(5p + 9)(p - 2)$

10) $28n^4 + 16n^3 - 80n^2$

$4n^2(7n - 10)(n + 2)$

11) $3b^3 - 5b^2 + 2b$

$b(3b - 2)(b - 1)$

12) $7x^2 - 32x - 60$

$(7x + 10)(x - 6)$

13) $30n^2b - 87nb + 30b$

$3b(2n - 5)(5n - 2)$

14) $9r^2 - 5r - 10$

Not factorable

15) $9p^2r + 73pr + 70r$

$r(p + 7)(9p + 10)$

16) $9x^2 + 7x - 56$

Not factorable

17) $4x^3 + 43x^2 + 30x$

$x(x + 10)(4x + 3)$

18) $10m^2 + 89m - 9$

$(m + 9)(10m - 1)$

Critical thinking questions:

19) For what values of b is the expression factorable?
$x^2 + bx + 12$

13, 8, 7, –13, –8, –7

20) Name four values of b which make the expression factorable:
$x^2 - 3x + b$

Many answers. Ex: 0, 2, –4, –10, –18