Practice Exercises

Factor the following polynomials completely.

1. $6x^2 + x - 2$
2. $3x^2 + x - 2$
3. $2a^2 - a - 6$
4. $4m^2 + 3m - 1$
5. $3a^2 + a - 4$

Problem Set

Factor the following polynomials completely.

1. $3x^2+7x+4$
2. $2x^2+3x-9$
3. $6a^2+11a+3$
4. $4m^2-5m-6$
5. $3a^2-a-4$
6. $4m^2-11mn+6n^2$
7. $3a^2-7ab-6b^2$
8. $4c^2-19cd-5d^2$
9. $10x^2-27xy+18y^2$
10. $6m^2-7mn-3n^2$

Problem Set

1. $3x^2+3x+4x+4$
$=(3x^2+3x)+(4x+4)$
$=3x(x+1)+4(x+1)$
$=(x+1)(3x+4)$

2. $2x^2-3x+6x-9$
$=(2x^2-3x)+(6x-9)$
$=x(2x-3)+3(2x-3)$
$=(2x-3)(x+3)$

3. $6a^2+2a+9a+3$
$=(6a^2+2a)+(9a+3)$
$=2a(3a+1)+3(3a+1)$
$=(3a+1)(2a+3)$

4. $4m^2-8m+3m-6$
$=(4m^2-8m)+(3m-6)$
$=4m(m-2)+3(m-2)$
$=(m-2)(4m+3)$

5. $3a^2-4a+3a-4$
$=(3a^2-4a)+(3a-4)$
$=a(3a-4)+(3a-4)$
$=(3a-4)(a+1)$

6. $4m^2-8mn-3mn+6n^2$
$=(4m^2-8mn)-(3mn-6n^2)$
$=4m(m-2n)-3n(m-2n)$
$=(m-2n)(4m-3n)$

7. $3a^2 - 9ab + 2ab - 6b^2$

$= (3a^2 - 9ab) + (2ab - 6b^2)$

$= 3a(a - 3b) + 2b(a - 3b)$

$= (a - 3b)(3a + 2b)$

8. $4c^2 - 20cd + cd - 5d^2$

$= (4c^2 - 20cd) + (cd - 5d^2)$

$= 4c(c - 5d) + d(c - 5d)$

$= (c - 5d)(4c + d)$

9. $10x^2 - 15xy - 12xy + 18y^2$

$= (10x^2 - 15xy) - (12xy - 18y^2)$

$= 5x(2x - 3y) - 6y(2x - 3y)$

$= (2x - 3y)(5x - 6y)$

10. $6m^2 - 9mn + 2mn - 3n^2$

$= (6m^2 - 9mn) + (2mn - 3n^2)$

$= 3m(2m - 3n) + n(2m - 3n)$

$= (2m - 3n)(3m + n)$