

## Fourteenth Set of Homework for Math 05

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**Please note:** You should fully justify your answers.

### 1 Factoring quadratic trinomials

1. Factor completely:

(a)  $4x^2 + 4x - 3$

(b)  $x^2 + 4x - 21$

(c)  $x^2 - 10x + 25$

(d)  $3x^2 + 5x - 2$

(e)  $-x^2 + x + 6$

(f)  $x^2 + 5x + 6$

(g)  $x^2 - 5x + 6$

(h)  $-x^2 - x + 6$

(i)  $x^2 - 13x + 42$

(j)  $x^2 - x - 42$

(k)  $x^2 + 8x + 12$

(l)  $15x^2 - 23x + 4$

(m)  $-6x^2 + 11x + 7$

(n)  $-x^2 - 12x - 35$

(o)  $x^2 - x - 56$

(p)  $x^2 + 8x - 9$

(q)  $x^2 - 6x + 9$

(r)  $9x^2 + 12x + 4$

(s)  $x^2 - 17x + 60$

(t)  $x^2 + 17x - 60$

(u)  $x^2 + 21x - 100$

(v)  $21x^2 + 25x - 4$

### 2 Factoring using identities

1. Factor completely:

(a)  $x^2 - 81$

(b)  $9x^2 - 100$

(c)  $49x^2 - 1$

(d)  $16x^2 - 25y^2$

(e)  $-b^2 + 36a^2$

(f)  $x^3 + 27$

(g)  $x^3 - 8$

(h)  $x^4 - 81$

(i)  $a^6 - b^6$

### 3 Review of factoring

1. Factor the following polynomials as much as you can. If you think that a polynomial is irreducible state so and explain why.

(a)  $7x^3 - 28x$

(b)  $5x^2 - 9x$

(c)  $x^2 + 1$

(d)  $2x^4 - 7x^3 - 4x^2$

(e)  $9x^2 - x^2y^2 + 4y^2 - 36$

(f)  $x^4y^2z - x^4z^3 + 8xz^3 - 8xzy^2$

(g)  $x^4 - 10x^2 + 9$

(h)  $4x^4 - 25x^2 + 36$

(i)  $x^4 - 81$

(j)  $4x^2y^2 - 12xy^2 + 9y^2 + 108x - 36x^2 - 81$