Pre-Calculus 10
Chapter 3 Practice test

1. Expand and simplify the following polynomials.
   a) $(x-2)(x+4)$ $x^2 + 2x - 8$
   b) $(x+5)(x-6)$ $x^2 - x - 30$
   c) $(x+3)(x+2)$ $x^2 + 5x + 6$
   d) $(5x+6)(7x-5)$ $35x^2 + 17x - 30$
   e) $3(2x+3)(2x-1) - 4(x^2-7)$ $8x^2 + 12x + 19$
   f) $(-2x^2y^4)(3x^3y)$ $-6x^5y^5$
   g) $-xy^2z(x^2y^2z - xyz^2 - x^3y^2)$ $-x^3y^4z^2 + x^2y^3z^3 + x^4y^4z$
   h) $(4x+9)(7x^2+x-3)$ $28x^3 + 67x^2 - 3x - 27$
   i) $(6x-9)^2$ $36x^2 - 108x + 81$

2. Factor the following polynomials by taking out the greatest common factor.
   a) $12xy - 15y^2 + 24y$ $3y(4x - 5y + 8)$
   b) $9x^3 - 24x^2 - 15x$ $3x(3x^2 - 8x - 5)$
   c) $4x^3 + 8x^2 - 12x$ $4x(x^2 + 2x - 3)$
   d) $10x^4 + 5x^3 - 15x^2$ $5x^2(2x+3)(x-1)$
   e) $10x^2y^2 - 15xy^3 + 25x^3y^4$ $5xy^2(2x - 3y + 5x^2y^2)$

3. Factor, if possible.
   a) $x^2 + 8x + 7$ $(x+7)(x+1)$ b) $x^2 - 11x + 28$ $(x-7)(x-4)$

   c) $x^2 - 6x + 9$ $(x-3)^2$ d) $x^2 - 7x + 6$ $(x-6)(x-1)$

   e) $x^2 - 8x + 7$ $(x-7)(x-1)$ f) $x^2 - 4x - 45$ $(x-9)(x+5)$

   g) $x^2 - 2x - 15$ $(x-5)(x+3)$ h) $x^2 + 2x - 15$ $(x+5)(x-3)$

   i) $x^2 - 6x - 40$ $(x-10)(x+4)$

4. Factor, if possible.
   a) $2x^2 + 24x + 40$ $2(x+10)(x+2)$

   b) $3x^2 + 6x - 24$ $3(x+4)(x-2)$

   c) $3x^2 + 12x - 36$ $3(x+6)(x-2)$

   d) $-2x^3 + 2x^2 + 12x$ $-2x(x-3)(x+2)$

   e) $-2x^4 + 8x^3y - 8x^2y^2$ $-2x^2(x-2y)^2$

   f) $3x^2 - 21x + 30$ $3(x-5)(x-2)$

   g) $x^4 - 9x^2 - 90$ $(x^2-15)(x^2+6)$

5. Factor, if possible.

a) $x^2 - 64$ $(x+8)(x-8)$

b) $x^2 + 16$ $\varnothing$

c) $4x^2 - 9y^2$ $(2x+3y)(2x-3y)$

d) $1 - 16x^4$ $(1+4x^2)(1+2x)(1-2x)$

e) $4x^2 - 16y^2$ $4(x+2y)(x-2y)$

f) $196x^2 - 25y^2$ $(14x+5y)(14x-5y)$

g) $411x^2 - 529y^2$ $(21x+23y)(21x-23y)$

6. Factor, if possible.

a) a) $18x^2 + 60x + 50$ $2(3x+5)^2$

c) b) $4x^2 + 12x + 9$ $(2x+3)^2$

e) c) $16x^2 - 40x^3 + 25x^4$ $x^2(5x-4)^2$

g) d) $4x^2 - 8xy - 5y^2$ $(2x+y)(2x-5y)$

i) e) $-18x^3 - 24x^2y - 8xy^2$ $-2x(3x+2y)^2$

k) f) $x^2 - 9xy + 14y^2$ $(x-7y)(x-2y)$

m) g) $a^2c + a^2d^2 - b^2c - b^2d^2$ $(a+b)(a-b)(c+d^2)$