[factoring polynomials]

1. Factor:
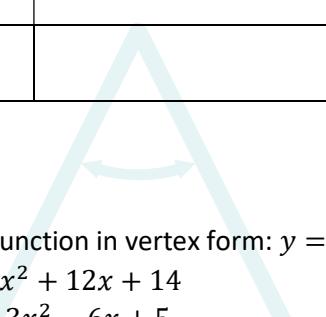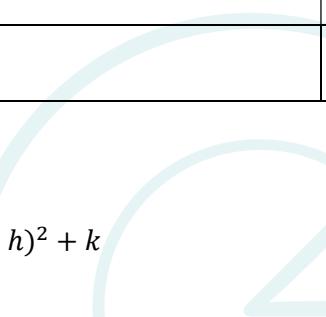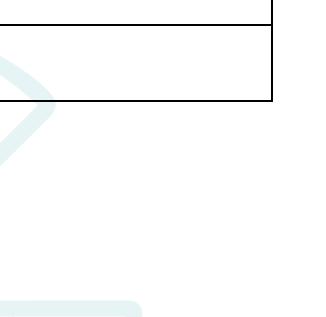
   a) $15x^2 - 6xy + 21x$
   b) $x^2 - 17x + 42$
   c) $10x^2 + 7xy - 12y^2$
   d) $15x^3 + 21x^2y - 18xy^2$
   e) $10a^2 + 46a - 20$
   f) $12x^2 + 20x + 3$
   g) $100p^2 - 36q^2$
   h) $3a(x - y) - (x + y)(x - y)$
   i) $5y(a - 2) - (a - 2)^2$
   j) $9a^2 - (b + c)^2$
   k) $x^2 - 9y^2 + x - 3y$
   l) $a^2 - 2ac + c^2 - b^2$
   m) $x^2 - c^2 - 2bx + b^2$
   n) $x^2 - y^2 + 6y - 9$
   o) $27x^3 + 125y^3$
   p) $mc^3 + 1000m$
   q) $64 - 8y^6$
   r) $3x - 81x^4$
   s) $3x^3 + 2x^2 - 75x - 50$
   t) $x^4 + 2x^3y^3 - 3x^2y^6$
   u) $21a^4 - 25a^2 - 4$
   v) $x^3 + 4x^2 + 5x + 2$
   w) $x^3 + 2x^2 - 3$

2. Solve

   a) $x^3 + 8x = 0$
   b) $2x^2 + 4x - 7 = 0$
   c) $5a^3 + 21a^2 - 20a = 0$
   d) $5x^3 - 2x^2 + 20x - 8 = 0$
   e) $2x^3 - 3x^2 - 11x + 6 = 0$
   f) $x^3 - 7x - 6 = 0$
   g) $3x^4 - 15x^2 + 12 = 0$
   h) $x^4 + 125x = 0$
   i) $x^5 - x^4 - 5x^3 + 5x^2 - 6x + 6 = 0$

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3. Complete the following table:

	$y = 3(x - 4)^2 + 1$	$y = -x^2 + 2$	$y = \dfrac{-1}{2}(x + 5)^2$
Vertex			
Direction of Opening			
Max or Min Value of y			
Max or Min			
Graph			

4. Put each function in vertex form: $y = a(x - h)^2 + k$
   a) $y = 3x^2 + 12x + 14$
   b) $y = -3x^2 - 6x + 5$
   c) $y = 2x^2 + 3x - 4$

5. Graph each function in question 4.

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