1 Text Tests

Georgia: 0123456789, $20, €30, £60. Naïve Æsop's Œuvres in français were my first reading. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Georgia Italic: 0123456789, $20, €30, £60. Naïve Æsop's Œuvres in français were my first reading. Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

Georgia Bold: 0123456789, $20, €30, £60. Naïve Æsop's Œuvres in français were my first reading. Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.

Georgia Bold Italic: 0123456789, $20, €30, £60. Naïve Æsop's Œuvres in français were my first reading. Quisque ullamcorper placerat ipsum. Cras nibh. Morbi vel justo vitae lacus tincidunt ultrices. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. In hac habitasse platea dictumst. Integer tempus convallis augue. Etiam facilisis. Nunc elementum fermentum wisi. Aenean placerat. Ut imperdiet, enim sed gravida sollicitudin, felis odio placerat quam, ac pulvinar elit purus eget enim. Nunc vitae tortor. Proin tempus nibh sit amet nisl. Vivamus quis tortor vitae risus

porta vehicula.

Franklin Gothic Book: 0123456789, $20, €30, £60. Naïve Æsop's Œuvres in français were my first reading. Fusce mauris. Vestibulum luctus nibh at lectus. Sed bibendum, nulla a faucibus semper, leo velit ultricies tellus, ac venenatis arcu wisi vel nisl. Vestibulum diam. Aliquam pellentesque, augue quis sagittis posuere, turpis lacus congue quam, in hendrerit risus eros eget felis. Maecenas eget erat in sapien mattis porttitor. Vestibulum porttitor. Nulla facilisi. Sed a turpis eu lacus commodo facilisis. Morbi fringilla, wisi in dignissim interdum, justo lectus sagittis dui, et vehicula libero dui cursus dui. Mauris tempor ligula sed lacus. Duis cursus enim ut augue. Cras ac magna. Cras nulla. Nulla egestas. Curabitur a leo. Quisque egestas wisi eget nunc. Nam feugiat lacus vel est. Curabitur consectetuer.

Franklin Gothic Book Italic: 0123456789, $20, €30, £60. Naïve Æsop's Œuvres in français were my first reading. Suspendisse vel felis. Ut lorem lorem, interdum eu, tincidunt sit amet, laoreet vitae, arcu. Aenean faucibus pede eu ante. Praesent enim elit, rutrum at, molestie non, nonummy vel, nisl. Ut lectus eros, malesuada sit amet, fermentum eu, sodales cursus, magna. Donec eu purus. Quisque vehicula, urna sed ultricies auctor, pede lorem egestas dui, et convallis elit erat sed nulla. Donec luctus. Curabitur et nunc. Aliquam dolor odio, commodo pretium, ultricies non, pharetra in, velit. Integer arcu est, nonummy in, fermentum faucibus, egestas vel, odio.

Franklin Gothic Medium: 0123456789, $20, €30, £60. Naïve Æsop's Œuvres in français were my first reading. Sed commodo posuere pede. Mauris ut est. Ut quis purus. Sed ac odio. Sed vehicula hendrerit sem. Duis non odio. Morbi ut dui. Sed accumsan risus eget odio. In hac habitasse platea dictumst. Pellentesque non elit. Fusce sed justo eu urna porta tincidunt. Mauris felis odio, sollicitudin sed, volutpat a, ornare ac, erat. Morbi quis dolor. Donec pellentesque, erat ac sagittis semper, nunc dui lobortis purus, quis congue purus metus ultricies tellus. Proin et quam. Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos hymenaeos. Praesent sapien turpis, fermentum vel, eleifend faucibus, vehicula eu, lacus.

Franklin Gothic Medum Italic: 0123456789, $20, €30, £60. Naïve Æsop's Œuvres in français were my first reading. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Donec odio elit, dictum in, hendrerit sit amet, egestas sed, leo. Praesent feugiat sapien aliquet odio. Integer vitae justo. Aliquam vestibulum fringilla lorem. Sed neque lectus, consectetuer at, consectetuer sed, eleifend ac, lectus. Nulla facilisi. Pellentesque eget lectus. Proin eu metus. Sed porttitor. In hac habitasse platea dictumst. Suspendisse eu lectus. Ut mi mi, lacinia sit amet, placerat et, mollis vitae, dui. Sed ante tellus, tristique ut, iaculis eu, malesuada ac, dui. Mauris nibh leo, facilisis non, adipiscing quis, ultrices a, dui.

Franklin Gothic Medium Condensed: 0123456789, $20, €30, £60. Naïve Æsop's Œuvres in français were my first reading. Morbi luctus, wisi viverra faucibus pretium, nibh est placerat odio, nec commodo wisi enim eget quam. Quisque libero justo, consectetuer a, feugiat vitae, porttitor eu, libero. Suspendisse sed mauris vitae elit sollicitudin malesuada. Maecenas ultricies eros sit amet ante. Ut venenatis velit. Maecenas sed mi eget dui varius euismod. Phasellus aliquet volutpat odio. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices

posuere cubilia Curae; Pellentesque sit amet pede ac sem eleifend consectetuer. Nullam elementum, urna vel imperdiet sodales, elit ipsum pharetra ligula, ac pretium ante justo a nulla. Curabitur tristique arcu eu metus. Vestibulum lectus. Proin mauris. Proin eu nunc eu urna hendrerit faucibus. Aliquam auctor, pede consequat laoreet varius, eros tellus scelerisque quam, pellentesque hendrerit ipsum dolor sed augue. Nulla nec lacus.

Franklin Gothic Demibold: 0123456789, $20, €30, £60. Naïve Æsop's Œuvres in français were my first reading. Suspendisse vitae elit. Aliquam arcu neque, ornare in, ullamcorper quis, commodo eu, libero. Fusce sagittis erat at erat tristique mollis. Maecenas sapien libero, molestie et, lobortis in, sodales eget, dui. Morbi ultrices rutrum lorem. Nam elementum ullamcorper leo. Morbi dui. Aliquam sagittis. Nunc placerat. Pellentesque tristique sodales est. Maecenas imperdiet lacinia velit. Cras non urna. Morbi eros pede, suscipit ac, varius vel, egestas non, eros. Praesent malesuada, diam id pretium elementum, eros sem dictum tortor, vel consectetuer odio sem sed wisi.

Franklin Gothic Demibold Italic: 0123456789, $20, €30, £60. Naïve Æsop's Œuvres in français were my first reading. Sed feugiat. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Ut pellentesque augue sed urna. Vestibulum diam eros, fringilla et, consectetuer eu, nonummy id, sapien. Nullam at lectus. In sagittis ultrices mauris. Curabitur malesuada erat sit amet massa. Fusce blandit. Aliquam erat volutpat. Aliquam euismod. Aenean vel lectus. Nunc imperdiet justo nec dolor.

Franklin Gothic Demibold Condensed: 0123456789, $20, €30, £60. Naïve Æsop's Œuvres in français were my first reading. Etiam euismod. Fusce facilisis lacinia dui. Suspendisse potenti. In mi erat, cursus id, nonummy sed, ullamcorper eget, sapien. Praesent pretium, magna in eleifend egestas, pede pede pretium lorem, quis consectetuer tortor sapien facilisis magna. Mauris quis magna varius nulla scelerisque imperdiet. Aliquam non quam. Aliquam porttitor quam a lacus. Praesent vel arcu ut tortor cursus volutpat. In vitae pede quis diam bibendum placerat. Fusce elementum convallis neque. Sed dolor orci, scelerisque ac, dapibus nec, ultricies ut, mi. Duis nec dui quis leo sagittis commodo.

Franklin Gothic Heavy: 0123456789, $20, €30, £60. Naïve Æsop's Œuvres in français were my first reading. Aliquam lectus. Vivamus leo. Quisque ornare tellus ullamcorper nulla. Mauris porttitor pharetra tortor. Sed fringilla justo sed mauris. Mauris tellus. Sed non leo. Nullam elementum, magna in cursus sodales, augue est scelerisque sapien, venenatis congue nulla arcu et pede. Ut suscipit enim vel sapien. Donec congue. Maecenas urna mi, suscipit in, placerat ut, vestibulum ut, massa. Fusce ultrices nulla et nisl.

Franklin Gothic Heavy Italic: 0123456789, $20, €30, £60. Naïve Æsop's Œuvres in français were my first reading. Etiam ac leo a risus tristique nonummy. Donec dignissim tincidunt nulla. Vestibulum rhoncus molestie odio. Sed lobortis, justo et pretium lobortis, mauris turpis condimentum augue, nec ultricies nibh arcu pretium enim. Nunc purus neque, placerat id, imperdiet sed, pellentesque nec, nisl. Vestibulum imperdiet neque non sem accumsan laoreet. In hac habitasse platea dictumst. Etiam condimentum facilisis libero. Suspendisse in elit quis nisl aliquam dapibus. Pellentesque auctor sapien. Sed egestas sapien nec lectus. Pellentesque vel dui

vel neque bibendum viverra. Aliquam porttitor nisl nec pede. Proin mattis libero vel turpis. Donec rutrum mauris et libero. Proin euismod porta felis. Nam lobortis, metus quis elementum commodo, nunc lectus elementum mauris, eget vulputate ligula tellus eu neque. Vivamus eu dolor.

2 Math Tests

Math test are taken from[1]. Note that we do not have \jmath, so we took one from CM.

2.1 Math Alphabets

Math Italic (\mathnormal)

$0, 1, 2, 3, 4, 5, 6, 7, 8, 9,$
$A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z,$
$a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z, \iota, \jmath,$
$A, B, \Gamma, \Delta, E, Z, H, \Theta, I, K, \Lambda, M, N, \Xi, O, \Pi, P, \Sigma, T, Y, \Phi, X, \Psi, \Omega, \nabla,$
$\alpha, \beta, \gamma, \delta, \epsilon, \zeta, \eta, \theta, \iota, \kappa, \lambda, \mu, \nu, \xi, o, \pi, \rho, \sigma, \tau, \upsilon, \varphi, \chi, \psi, \omega, \varepsilon, \vartheta, \varpi, \varrho, \varsigma, \varphi,$

Math Roman (\mathrm)

$0, 1, 2, 3, 4, 5, 6, 7, 8, 9,$
$A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z,$
$a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z, \iota, \jmath,$
$A, B, \Gamma, \Delta, E, Z, H, \Theta, I, K, \Lambda, M, N, \Xi, O, \Pi, P, \Sigma, T, Y, \Phi, X, \Psi, \Omega, \nabla,$
$\alpha, \beta, \gamma, \delta, \epsilon, \zeta, \eta, \theta, \iota, \kappa, \lambda, \mu, \nu, \xi, o, \pi, \rho, \sigma, \tau, \upsilon, \varphi, \chi, \psi, \omega, \varepsilon, \vartheta, \varrho, \varsigma, \varphi,$

Math Bold (\mathbf)

$\mathbf{0, 1, 2, 3, 4, 5, 6, 7, 8, 9,}$
$\mathbf{A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z,}$
$\mathbf{a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z,} \iota, \jmath,$
$\mathbf{A, B, \Gamma, \Delta, E, Z, H, \Theta, I, K, \Lambda, M, N, \Xi, O, \Pi, P, \Sigma, T, Y, \Phi, X, \Psi, \Omega,} \nabla,$

Math Sans Serif (\mathsf)

$\mathsf{0, 1, 2, 3, 4, 5, 6, 7, 8, 9,}$
$\mathsf{A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z,}$
$\mathsf{a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z,} \iota, \jmath,$
$\mathsf{A, B, \Gamma, \Delta, E, Z, H, \Theta, I, K, \Lambda, M, N, \Xi, O, \Pi, P, \Sigma, T, Y, \Phi, X, \Psi, \Omega,} \nabla,$

2.2 Character Sidebearings

$|A| + |B| + |C| + |D| + |E| + |F| + |G| + |H| + |I| + |J| + |K| + |L| + |M| +$
$|N| + |O| + |P| + |Q| + |R| + |S| + |T| + |U| + |V| + |W| + |X| + |Y| + |Z| +$
$|a| + |b| + |c| + |d| + |e| + |f| + |g| + |h| + |i| + |j| + |k| + |l| + |m| +$
$|n| + |o| + |p| + |q| + |r| + |s| + |t| + |u| + |v| + |w| + |x| + |y| + |z| + |\imath| + |\jmath| +$
$|A| + |B| + |\Gamma| + |\Delta| + |E| + |Z| + |H| + |\Theta| + |I| + |K| + |\Lambda| + |M| +$
$|N| + |\Xi| + |O| + |\Pi| + |P| + |\Sigma| + |T| + |Y| + |\Phi| + |X| + |\Psi| + |\Omega| + |\nabla| +$
$|\alpha| + |\beta| + |\gamma| + |\delta| + |\epsilon| + |\zeta| + |\eta| + |\theta| + |\iota| + |\kappa| + |\lambda| + |\mu| +$
$|\nu| + |\xi| + |o| + |\pi| + |\rho| + |\sigma| + |\tau| + |\upsilon| + |\varphi| + |\chi| + |\psi| + |\omega| +$
$|\varepsilon| + |\vartheta| + |\pi| + |\varrho| + |\varsigma| + |\varphi| +$

$|A| + |B| + |C| + |D| + |E| + |F| + |G| + |H| + |I| + |J| + |K| + |L| + |M| +$
$|N| + |O| + |P| + |Q| + |R| + |S| + |T| + |U| + |V| + |W| + |X| + |Y| + |Z| +$
$|a| + |b| + |c| + |d| + |e| + |f| + |g| + |h| + |i| + |j| + |k| + |l| + |m| +$
$|n| + |o| + |p| + |q| + |r| + |s| + |t| + |u| + |v| + |w| + |x| + |y| + |z| + |\imath| + |\jmath| +$
$|A| + |B| + |\Gamma| + |\Delta| + |E| + |Z| + |H| + |\Theta| + |I| + |K| + |\Lambda| + |M| +$
$|N| + |\Xi| + |O| + |\Pi| + |P| + |\Sigma| + |T| + |Y| + |\Phi| + |X| + |\Psi| + |\Omega| + |\nabla| +$

$|A| + |B| + |C| + |D| + |E| + |F| + |G| + |H| + |I| + |J| + |K| + |L| + |M| +$
$|N| + |O| + |P| + |Q| + |R| + |S| + |T| + |U| + |V| + |W| + |X| + |Y| + |Z| +$

2.3 Superscript positioning

$A^2 + B^2 + C^2 + D^2 + E^2 + F^2 + G^2 + H^2 + I^2 + J^2 + K^2 + L^2 + M^2 +$
$N^2 + O^2 + P^2 + Q^2 + R^2 + S^2 + T^2 + U^2 + V^2 + W^2 + X^2 + Y^2 + Z^2 +$
$a^2 + b^2 + c^2 + d^2 + e^2 + f^2 + g^2 + h^2 + i^2 + j^2 + k^2 + l^2 + m^2 +$
$n^2 + o^2 + p^2 + q^2 + r^2 + s^2 + t^2 + u^2 + v^2 + w^2 + x^2 + y^2 + z^2 + \imath^2 + \jmath^2 +$
$A^2 + B^2 + \Gamma^2 + \Delta^2 + E^2 + Z^2 + H^2 + \Theta^2 + I^2 + K^2 + \Lambda^2 + M^2 +$
$N^2 + \Xi^2 + O^2 + \Pi^2 + P^2 + \Sigma^2 + T^2 + Y^2 + \Phi^2 + X^2 + \Psi^2 + \Omega^2 + \nabla^2 +$
$\alpha^2 + \beta^2 + \gamma^2 + \delta^2 + \epsilon^2 + \zeta^2 + \eta^2 + \theta^2 + \iota^2 + \kappa^2 + \lambda^2 + \mu^2 +$
$\nu^2 + \xi^2 + o^2 + \pi^2 + \rho^2 + \sigma^2 + \tau^2 + \upsilon^2 + \varphi^2 + \chi^2 + \psi^2 + \omega^2 +$
$\varepsilon^2 + \vartheta^2 + \varpi^2 + \varrho^2 + \varsigma^2 + \varphi^2 +$

$\mathrm{A}^2 + \mathrm{B}^2 + \mathrm{C}^2 + \mathrm{D}^2 + \mathrm{E}^2 + \mathrm{F}^2 + \mathrm{G}^2 + \mathrm{H}^2 + \mathrm{I}^2 + \mathrm{J}^2 + \mathrm{K}^2 + \mathrm{L}^2 + \mathrm{M}^2 +$
$\mathrm{N}^2 + \mathrm{O}^2 + \mathrm{P}^2 + \mathrm{Q}^2 + \mathrm{R}^2 + \mathrm{S}^2 + \mathrm{T}^2 + \mathrm{U}^2 + \mathrm{V}^2 + \mathrm{W}^2 + \mathrm{X}^2 + \mathrm{Y}^2 + \mathrm{Z}^2 +$
$\mathrm{a}^2 + \mathrm{b}^2 + \mathrm{c}^2 + \mathrm{d}^2 + \mathrm{e}^2 + \mathrm{f}^2 + \mathrm{g}^2 + \mathrm{h}^2 + \mathrm{i}^2 + \mathrm{j}^2 + \mathrm{k}^2 + \mathrm{l}^2 + \mathrm{m}^2 +$
$\mathrm{n}^2 + \mathrm{o}^2 + \mathrm{p}^2 + \mathrm{q}^2 + \mathrm{r}^2 + \mathrm{s}^2 + \mathrm{t}^2 + \mathrm{u}^2 + \mathrm{v}^2 + \mathrm{w}^2 + \mathrm{x}^2 + \mathrm{y}^2 + \mathrm{z}^2 + \imath^2 + \jmath^2 +$
$\mathrm{A}^2 + \mathrm{B}^2 + \Gamma^2 + \Delta^2 + \mathrm{E}^2 + \mathrm{Z}^2 + \mathrm{H}^2 + \Theta^2 + \mathrm{I}^2 + \mathrm{K}^2 + \Lambda^2 + \mathrm{M}^2 +$
$\mathrm{N}^2 + \Xi^2 + \mathrm{O}^2 + \Pi^2 + \mathrm{P}^2 + \Sigma^2 + \mathrm{T}^2 + \mathrm{Y}^2 + \Phi^2 + \mathrm{X}^2 + \Psi^2 + \Omega^2 + \nabla^2 +$

$\mathrm{A}^2 + \mathrm{B}^2 + \mathrm{C}^2 + \mathrm{D}^2 + \mathrm{E}^2 + \mathrm{F}^2 + \mathrm{G}^2 + \mathrm{H}^2 + \mathrm{I}^2 + \mathrm{J}^2 + \mathrm{K}^2 + \mathrm{L}^2 + \mathrm{M}^2 +$
$\mathrm{N}^2 + \mathrm{O}^2 + \mathrm{P}^2 + \mathrm{Q}^2 + \mathrm{R}^2 + \mathrm{S}^2 + \mathrm{T}^2 + \mathrm{U}^2 + \mathrm{V}^2 + \mathrm{W}^2 + \mathrm{X}^2 + \mathrm{Y}^2 + \mathrm{Z}^2 +$

2.4 Subscript positioning

$A_i + B_i + C_i + D_i + E_i + F_i + G_i + H_i + I_i + J_i + K_i + L_i + M_i+$
$N_i + O_i + P_i + Q_i + R_i + S_i + T_i + U_i + V_i + W_i + X_i + Y_i + Z_i+$
$a_i + b_i + c_i + d_i + e_i + f_i + g_i + h_i + i_i + j_i + k_i + l_i + m_i+$
$n_i + o_i + p_i + q_i + r_i + s_i + t_i + u_i + v_i + w_i + x_i + y_i + z_i + \imath_i + \jmath_i+$
$A_i + B_i + \Gamma_i + \Delta_i + E_i + Z_i + H_i + \Theta_i + I_i + K_i + \Lambda_i + M_i+$
$N_i + \Xi_i + O_i + \Pi_i + P_i + \Sigma_i + T_i + Y_i + \Phi_i + X_i + \Psi_i + \Omega_i + \nabla_i+$
$\alpha_i + \beta_i + \gamma_i + \delta_i + \epsilon_i + \zeta_i + \eta_i + \theta_i + \iota_i + \kappa_i + \lambda_i + \mu_i+$
$\nu_i + \xi_i + o_i + \pi_i + \rho_i + \sigma_i + \tau_i + \upsilon_i + \varphi_i + \chi_i + \psi_i + \omega_i+$
$\varepsilon_i + \vartheta_i + \varpi_i + \varrho_i + \varsigma_i + \varphi_i+$

$\mathrm{A}_i + \mathrm{B}_i + \mathrm{C}_i + \mathrm{D}_i + \mathrm{E}_i + \mathrm{F}_i + \mathrm{G}_i + \mathrm{H}_i + \mathrm{I}_i + \mathrm{J}_i + \mathrm{K}_i + \mathrm{L}_i + \mathrm{M}_i+$
$\mathrm{N}_i + \mathrm{O}_i + \mathrm{P}_i + \mathrm{Q}_i + \mathrm{R}_i + \mathrm{S}_i + \mathrm{T}_i + \mathrm{U}_i + \mathrm{V}_i + \mathrm{W}_i + \mathrm{X}_i + \mathrm{Y}_i + \mathrm{Z}_i+$
$\mathrm{a}_i + \mathrm{b}_i + \mathrm{c}_i + \mathrm{d}_i + \mathrm{e}_i + \mathrm{f}_i + \mathrm{g}_i + \mathrm{h}_i + \mathrm{i}_i + \mathrm{j}_i + \mathrm{k}_i + \mathrm{l}_i + \mathrm{m}_i+$
$\mathrm{n}_i + \mathrm{o}_i + \mathrm{p}_i + \mathrm{q}_i + \mathrm{r}_i + \mathrm{s}_i + \mathrm{t}_i + \mathrm{u}_i + \mathrm{v}_i + \mathrm{w}_i + \mathrm{x}_i + \mathrm{y}_i + \mathrm{z}_i + \imath_i + \jmath_i+$
$\mathrm{A}_i + \mathrm{B}_i + \Gamma_i + \Delta_i + \mathrm{E}_i + \mathrm{Z}_i + \mathrm{H}_i + \Theta_i + \mathrm{I}_i + \mathrm{K}_i + \Lambda_i + \mathrm{M}_i+$
$\mathrm{N}_i + \Xi_i + \mathrm{O}_i + \Pi_i + \mathrm{P}_i + \Sigma_i + \mathrm{T}_i + \mathrm{Y}_i + \Phi_i + \mathrm{X}_i + \Psi_i + \Omega_i + \nabla_i+$

$\mathrm{A}_i + \mathrm{B}_i + \mathrm{C}_i + \mathrm{D}_i + \mathrm{E}_i + \mathrm{F}_i + \mathrm{G}_i + \mathrm{H}_i + \mathrm{I}_i + \mathrm{J}_i + \mathrm{K}_i + \mathrm{L}_i + \mathrm{M}_i+$
$\mathrm{N}_i + \mathrm{O}_i + \mathrm{P}_i + \mathrm{Q}_i + \mathrm{R}_i + \mathrm{S}_i + \mathrm{T}_i + \mathrm{U}_i + \mathrm{V}_i + \mathrm{W}_i + \mathrm{X}_i + \mathrm{Y}_i + \mathrm{Z}_i+$

2.5 Accent positioning

$$\hat{A} + \hat{B} + \hat{C} + \hat{D} + \hat{E} + \hat{F} + \hat{G} + \hat{H} + \hat{I} + \hat{J} + \hat{K} + \hat{L} + \hat{M} +$$
$$\hat{N} + \hat{O} + \hat{P} + \hat{Q} + \hat{R} + \hat{S} + \hat{T} + \hat{U} + \hat{V} + \hat{W} + \hat{X} + \hat{Y} + \hat{Z} +$$
$$\hat{a} + \hat{b} + \hat{c} + \hat{d} + \hat{e} + \hat{f} + \hat{g} + \hat{h} + \hat{i} + \hat{j} + \hat{k} + \hat{l} + \hat{m} +$$
$$\hat{n} + \hat{o} + \hat{p} + \hat{q} + \hat{r} + \hat{s} + \hat{t} + \hat{u} + \hat{v} + \hat{w} + \hat{x} + \hat{y} + \hat{z} + \hat{\imath} + \hat{\jmath} +$$
$$\hat{A} + \hat{B} + \hat{\Gamma} + \hat{\Delta} + \hat{E} + \hat{Z} + \hat{H} + \hat{\Theta} + \hat{I} + \hat{K} + \hat{\Lambda} + \hat{M} +$$
$$\hat{N} + \hat{\Xi} + \hat{O} + \hat{\Pi} + \hat{P} + \hat{\Sigma} + \hat{T} + \hat{Y} + \hat{\Phi} + \hat{X} + \hat{\Psi} + \hat{\Omega} + \hat{\nabla} +$$
$$\hat{\alpha} + \hat{\beta} + \hat{\gamma} + \hat{\delta} + \hat{\epsilon} + \hat{\zeta} + \hat{\eta} + \hat{\theta} + \hat{\imath} + \hat{\kappa} + \hat{\lambda} + \hat{\mu} +$$
$$\hat{\nu} + \hat{\xi} + \hat{o} + \hat{\pi} + \hat{\rho} + \hat{\sigma} + \hat{\tau} + \hat{\upsilon} + \hat{\varphi} + \hat{\chi} + \hat{\psi} + \hat{\omega} +$$
$$\hat{\varepsilon} + \hat{\vartheta} + \hat{\varpi} + \hat{\varrho} + \hat{\varsigma} + \hat{\varphi} +$$

$$\check{A} + \check{B} + \check{C} + \check{D} + \check{E} + \check{F} + \check{G} + \check{H} + \check{I} + \check{J} + \check{K} + \check{L} + \check{M} +$$
$$\check{N} + \check{O} + \check{P} + \check{Q} + \check{R} + \check{S} + \check{T} + \check{U} + \check{V} + \check{W} + \check{X} + \check{Y} + \check{Z} +$$
$$\check{a} + \check{b} + \check{c} + \check{d} + \check{e} + \check{f} + \check{g} + \check{h} + \check{i} + \check{j} + \check{k} + \check{l} + \check{m} +$$
$$\check{n} + \check{o} + \check{p} + \check{q} + \check{r} + \check{s} + \check{t} + \check{u} + \check{v} + \check{w} + \check{x} + \check{y} + \check{z} + \check{\imath} + \check{\jmath} +$$
$$\check{A} + \check{B} + \check{\Gamma} + \check{\Delta} + \check{E} + \check{Z} + \check{H} + \check{\Theta} + \check{I} + \check{K} + \check{\Lambda} + \check{M} +$$
$$\check{N} + \check{\Xi} + \check{O} + \check{\Pi} + \check{P} + \check{\Sigma} + \check{T} + \check{Y} + \check{\Phi} + \check{X} + \check{\Psi} + \check{\Omega} + \check{\nabla} +$$

$$\breve{A} + \breve{B} + \breve{C} + \breve{D} + \breve{E} + \breve{F} + \breve{G} + \breve{H} + \breve{I} + \breve{J} + \breve{K} + \breve{L} + \breve{M} +$$
$$\breve{N} + \breve{O} + \breve{P} + \breve{Q} + \breve{R} + \breve{S} + \breve{T} + \breve{U} + \breve{V} + \breve{W} + \breve{X} + \breve{Y} + \breve{Z} +$$

2.6 Differentials

$dA + dB + dC + dD + dE + dF + dG + dH + dI + dJ + dK + dL + dM+$
$dN + dO + dP + dQ + dR + dS + dT + dU + dV + dW + dX + dY + dZ+$
$da + db + dc + dd + de + df + dg + dh + di + dj + dk + dl + dm+$
$dn + do + dp + dq + dr + ds + dt + du + dv + dw + dx + dy + dz + d\iota + d\jmath+$
$dA + d\mathrm{B} + d\Gamma + d\Delta + d\mathrm{E} + d\mathrm{Z} + d\mathrm{H} + d\Theta + d\mathrm{I} + d\mathrm{K} + d\Lambda + d\mathrm{M}+$
$dN + d\Xi + dO + d\Pi + d\mathrm{P} + d\Sigma + d\mathrm{T} + d\Upsilon + d\Phi + d\mathrm{X} + d\Psi + d\Omega + d\nabla+$
$d\alpha + d\beta + d\gamma + d\delta + d\epsilon + d\zeta + d\eta + d\theta + d\iota + d\kappa + d\lambda + d\mu+$
$d\upsilon + d\xi + do + d\pi + d\rho + d\sigma + d\tau + d\upsilon + d\varphi + d\chi + d\psi + d\omega+$
$d\varepsilon + d\vartheta + d\varpi + d\varrho + d\varsigma + d\varphi+$
$d\mathrm{A} + d\mathrm{B} + d\Gamma + d\Delta + d\mathrm{E} + d\mathrm{Z} + d\mathrm{H} + d\Theta + d\mathrm{I} + d\mathrm{K} + d\Lambda + d\mathrm{M}+$
$d\mathrm{N} + d\Xi + d\mathrm{O} + d\Pi + d\mathrm{P} + d\Sigma + d\mathrm{T} + d\Upsilon + d\Phi + d\mathrm{X} + d\Psi + d\Omega + d\nabla+$

$\mathrm{d}A + \mathrm{d}B + \mathrm{d}C + \mathrm{d}D + \mathrm{d}E + \mathrm{d}F + \mathrm{d}G + \mathrm{d}H + \mathrm{d}I + \mathrm{d}J + \mathrm{d}K + \mathrm{d}L + \mathrm{d}M+$
$\mathrm{d}N + \mathrm{d}O + \mathrm{d}P + \mathrm{d}Q + \mathrm{d}R + \mathrm{d}S + \mathrm{d}T + \mathrm{d}U + \mathrm{d}V + \mathrm{d}W + \mathrm{d}X + \mathrm{d}Y + \mathrm{d}Z+$
$\mathrm{d}a + \mathrm{d}b + \mathrm{d}c + \mathrm{d}d + \mathrm{d}e + \mathrm{d}f + \mathrm{d}g + \mathrm{d}h + \mathrm{d}i + \mathrm{d}j + \mathrm{d}k + \mathrm{d}l + \mathrm{d}m+$
$\mathrm{d}n + \mathrm{d}o + \mathrm{d}p + \mathrm{d}q + \mathrm{d}r + \mathrm{d}s + \mathrm{d}t + \mathrm{d}u + \mathrm{d}v + \mathrm{d}w + \mathrm{d}x + \mathrm{d}y + \mathrm{d}z + \mathrm{d}\iota + \mathrm{d}\jmath+$
$\mathrm{d}A + \mathrm{d}B + \mathrm{d}\Gamma + \mathrm{d}\Delta + \mathrm{d}E + \mathrm{d}Z + \mathrm{d}H + \mathrm{d}\Theta + \mathrm{d}I + \mathrm{d}K + \mathrm{d}\Lambda + \mathrm{d}M+$
$\mathrm{d}N + \mathrm{d}\Xi + \mathrm{d}O + \mathrm{d}\Pi + \mathrm{d}P + \mathrm{d}\Sigma + \mathrm{d}T + \mathrm{d}\Upsilon + \mathrm{d}\Phi + \mathrm{d}X + \mathrm{d}\Psi + \mathrm{d}\Omega + \mathrm{d}\nabla+$
$\mathrm{d}\alpha + \mathrm{d}\beta + \mathrm{d}\gamma + \mathrm{d}\delta + \mathrm{d}\epsilon + \mathrm{d}\zeta + \mathrm{d}\eta + \mathrm{d}\theta + \mathrm{d}\iota + \mathrm{d}\kappa + \mathrm{d}\lambda + \mathrm{d}\mu+$
$\mathrm{d}\upsilon + \mathrm{d}\xi + \mathrm{d}o + \mathrm{d}\pi + \mathrm{d}\rho + \mathrm{d}\sigma + \mathrm{d}\tau + \mathrm{d}\upsilon + \mathrm{d}\varphi + \mathrm{d}\chi + \mathrm{d}\psi + \mathrm{d}\omega+$
$\mathrm{d}\varepsilon + \mathrm{d}\vartheta + \mathrm{d}\varpi + \mathrm{d}\varrho + \mathrm{d}\varsigma + \mathrm{d}\varphi+$
$\mathrm{d}\mathrm{A} + \mathrm{d}\mathrm{B} + \mathrm{d}\Gamma + \mathrm{d}\Delta + \mathrm{d}\mathrm{E} + \mathrm{d}\mathrm{Z} + \mathrm{d}\mathrm{H} + \mathrm{d}\Theta + \mathrm{d}\mathrm{I} + \mathrm{d}\mathrm{K} + \mathrm{d}\Lambda + \mathrm{d}\mathrm{M}+$
$\mathrm{d}\mathrm{N} + \mathrm{d}\Xi + \mathrm{d}\mathrm{O} + \mathrm{d}\Pi + \mathrm{d}\mathrm{P} + \mathrm{d}\Sigma + \mathrm{d}\mathrm{T} + \mathrm{d}\Upsilon + \mathrm{d}\Phi + \mathrm{d}\mathrm{X} + \mathrm{d}\Psi + \mathrm{d}\Omega + \mathrm{d}\nabla+$

$\partial A + \partial B + \partial C + \partial D + \partial E + \partial F + \partial G + \partial H + \partial I + \partial J + \partial K + \partial L + \partial M+$
$\partial N + \partial O + \partial P + \partial Q + \partial R + \partial S + \partial T + \partial U + \partial V + \partial W + \partial X + \partial Y + \partial Z+$
$\partial a + \partial b + \partial c + \partial d + \partial e + \partial f + \partial g + \partial h + \partial i + \partial j + \partial k + \partial l + \partial m+$
$\partial n + \partial o + \partial p + \partial q + \partial r + \partial s + \partial t + \partial u + \partial v + \partial w + \partial x + \partial y + \partial z + \partial \iota + \partial \jmath+$
$\partial A + \partial B + \partial \Gamma + \partial \Delta + \partial E + \partial Z + \partial H + \partial \Theta + \partial I + \partial K + \partial \Lambda + \partial M+$
$\partial N + \partial \Xi + \partial O + \partial \Pi + \partial P + \partial \Sigma + \partial T + \partial \Upsilon + \partial \Phi + \partial X + \partial \Psi + \partial \Omega + \partial \nabla+$
$\partial \alpha + \partial \beta + \partial \gamma + \partial \delta + \partial \epsilon + \partial \zeta + \partial \eta + \partial \theta + \partial \iota + \partial \kappa + \partial \lambda + \partial \mu+$
$\partial \upsilon + \partial \xi + \partial o + \partial \pi + \partial \rho + \partial \sigma + \partial \tau + \partial \upsilon + \partial \varphi + \partial \chi + \partial \psi + \partial \omega+$
$\partial \varepsilon + \partial \vartheta + \partial \varpi + \partial \varrho + \partial \varsigma + \partial \varphi+$
$\partial \mathrm{A} + \partial \mathrm{B} + \partial \Gamma + \partial \Delta + \partial \mathrm{E} + \partial \mathrm{Z} + \partial \mathrm{H} + \partial \Theta + \partial \mathrm{I} + \partial \mathrm{K} + \partial \Lambda + \partial \mathrm{M}+$
$\partial \mathrm{N} + \partial \Xi + \partial \mathrm{O} + \partial \Pi + \partial \mathrm{P} + \partial \Sigma + \partial \mathrm{T} + \partial \Upsilon + \partial \Phi + \partial \mathrm{X} + \partial \Psi + \partial \Omega + \partial \nabla+$

2.7   Slash kerning

1/A + 1/B + 1/C + 1/D + 1/E + 1/F + 1/G + 1/H + 1/I + 1/J + 1/K + 1/L + 1/M+
1/N + 1/O + 1/P + 1/Q + 1/R + 1/S + 1/T + 1/U + 1/V + 1/W + 1/X + 1/Y + 1/Z+
1/a + 1/b + 1/c + 1/d + 1/e + 1/f + 1/g + 1/h + 1/i + 1/j + 1/k + 1/l + 1/m+
1/n + 1/o + 1/p + 1/q + 1/r + 1/s + 1/t + 1/u + 1/v + 1/w + 1/x + 1/y + 1/z + 1/ı + 1/ȷ+
1/Α + 1/Β + 1/Γ + 1/Δ + 1/Ε + 1/Ζ + 1/Η + 1/Θ + 1/Ι + 1/Κ + 1/Λ + 1/Μ+
1/Ν + 1/Ξ + 1/Ο + 1/Π + 1/Ρ + 1/Σ + 1/Τ + 1/Υ + 1/Φ + 1/Χ + 1/Ψ + 1/Ω + 1/∇+
1/α + 1/β + 1/γ + 1/δ + 1/ε + 1/ζ + 1/η + 1/θ + 1/ι + 1/κ + 1/λ + 1/μ+
1/ν + 1/ξ + 1/ο + 1/π + 1/ρ + 1/σ + 1/τ + 1/υ + 1/φ + 1/χ + 1/ψ + 1/ω+
1/ε + 1/ϑ + 1/ϖ + 1/ϱ + 1/ς + 1/φ+

A/2 + B/2 + C/2 + D/2 + E/2 + F/2 + G/2 + H/2 + I/2 + J/2 + K/2 + L/2 + M/2+
N/2 + O/2 + P/2 + Q/2 + R/2 + S/2 + T/2 + U/2 + V/2 + W/2 + X/2 + Y/2 + Z/2+
a/2 + b/2 + c/2 + d/2 + e/2 + f/2 + g/2 + h/2 + i/2 + j/2 + k/2 + l/2 + m/2+
n/2 + o/2 + p/2 + q/2 + r/2 + s/2 + t/2 + u/2 + v/2 + w/2 + x/2 + y/2 + z/2 + ı/2 + ȷ/2+
Α/2 + Β/2 + Γ/2 + Δ/2 + Ε/2 + Ζ/2 + Η/2 + Θ/2 + Ι/2 + Κ/2 + Λ/2 + Μ/2+
Ν/2 + Ξ/2 + Ο/2 + Π/2 + Ρ/2 + Σ/2 + Τ/2 + Υ/2 + Φ/2 + Χ/2 + Ψ/2 + Ω/2 + ∇/2+
α/2 + β/2 + γ/2 + δ/2 + ε/2 + ζ/2 + η/2 + θ/2 + ι/2 + κ/2 + λ/2 + μ/2+
ν/2 + ξ/2 + ο/2 + π/2 + ρ/2 + σ/2 + τ/2 + υ/2 + φ/2 + χ/2 + ψ/2 + ω/2+
ε/2 + ϑ/2 + ϖ/2 + ϱ/2 + ς/2 + φ/2+

2.8 Big operators

$$\sum_{i=1}^{n} x^n \quad \prod_{i=1}^{n} x^n \quad \coprod_{i=1}^{n} x^n \quad \int_{i=1}^{n} x^n \quad \oint_{i=1}^{n} x^n$$

$$\bigotimes_{i=1}^{n} x^n \quad \bigoplus_{i=1}^{n} x^n \quad \bigodot_{i=1}^{n} x^n \quad \bigwedge_{i=1}^{n} x^n \quad \bigvee_{i=1}^{n} x^n \quad \biguplus_{i=1}^{n} x^n \quad \bigcup_{i=1}^{n} x^n \quad \bigcap_{i=1}^{n} x^n \quad \bigsqcup_{i=1}^{n} x^n$$

2.9 Radicals

$$\sqrt{x+y} \quad \sqrt{x^2+y^2} \quad \sqrt{x_i^2+y_j^2} \quad \sqrt{\left(\frac{\cos x}{2}\right)} \quad \sqrt{\left(\frac{\sin x}{2}\right)}$$

$$\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{x+y}}}}}}$$

2.10 Over- and underbraces

$$\overbrace{x} \quad \overbrace{x+y} \quad \overbrace{x^2+y^2} \quad \overbrace{x_i^2+y_j^2} \quad \underbrace{x} \quad \underbrace{x+y} \quad \underbrace{x_i+y_j} \quad \underbrace{x_i^2+y_j^2}$$

2.11 Normal and wide accents

$$\dot{x} \quad \ddot{x} \quad \vec{x} \quad \bar{x} \quad \bar{x} \quad \overline{xx} \quad \tilde{x} \quad \tilde{x} \quad \widetilde{xx} \quad \widetilde{xxx} \quad \hat{x} \quad \hat{x} \quad \widehat{xx} \quad \widehat{xxx}$$

2.12 Long arrows

$$\longleftarrow \quad \leftrightarrow \quad \leftarrow \quad \longrightarrow \quad \longleftrightarrow \quad \Longleftarrow\Longrightarrow \quad \Leftrightarrow \quad \Longleftarrow \quad \Longrightarrow \quad \Longleftrightarrow$$

2.13 Left and right delimters

$$-(f)--[f]--\lfloor f\rfloor--\lceil f\rceil--\langle f\rangle--\{f\}-$$

$$-(f)--\lfloor f\rfloor--\lfloor f\rfloor--\lceil f\rceil--\langle f\rangle--\{f\}-$$
$$-)f(--]f[--/f/--\backslash f\backslash--/f\backslash--\backslash f/-$$

2.14 Big-g-g delimters

$$\left\lfloor\left\lfloor\left\lfloor\left\lfloor\left\lfloor\left\lfloor\left\lfloor\left\lfloor-\right\rfloor\right\rfloor\right\rfloor\right\rfloor\right\rfloor\right\rfloor\right\rfloor\right\rfloor \qquad \left(\left(\left(\left(\left(\left(\left(\left(-\right)\right)\right)\right)\right)\right)\right)\right)$$

$$\left\lceil\left\lceil\left\lceil\left\lceil\left\lceil\left\lceil\left\lceil\left\lceil-\right\rceil\right\rceil\right\rceil\right\rceil\right\rceil\right\rceil\right\rceil\right\rceil \qquad \left\{\left\{\left\{\left\{\left\{\left\{\left\{\left\{-\right\}\right\}\right\}\right\}\right\}\right\}\right\}\right\}$$

$$\left\lfloor\left\lfloor\left\lfloor\left\lfloor\left\lfloor\left\lceil\left\lceil-\right\rceil\right\rceil\right\rfloor\right\rfloor\right\rfloor\right\rfloor\right\rfloor \qquad \left(\left(\left(\left(\left(\left(\left(-\right)\right)\right)\right)\right)\right)\right)$$

$$\left\langle\left\langle\left\langle\left\langle\left\langle\left\langle\left\langle\left\langle-\right\rangle\right\rangle\right\rangle\right\rangle\right\rangle\right\rangle\right\rangle\right\rangle \qquad \left.\int\int\int\int\int\int\int-\right.$$

2.15 Miscellanneous formulae

Taken from [2]

$$\hbar\nu = E$$

Let $\mathbf{A} = (a_{ij})$ be the adjacency matrix of graph G. The corresponding Kirchhoff matrix $\mathbf{K} = (k_{ij})$ is obtained from $\mathbf{A}$ by replacing in $-\mathbf{A}$ each diagonal entry by the degree of its corresponding vertex; i.e., the ith diagonal entry is identified with the degree of the ith vertex. It is well known that

$$\det \mathbf{K}(i|i) = \text{ the number of spanning trees of } G, \quad i = 1,\ldots,n \qquad (1)$$

where $\mathbf{K}(i|i)$ is the ith principal submatrix of $\mathbf{K}$.

Let $C_{i(j)}$ be the set of graphs obtained from G by attaching edge $(v_i v_j)$ to each spanning tree of G. Denote by $C_i = \bigcup_j C_{i(j)}$. It is obvious that the collection of Hamiltonian cycles is a subset of C_i. Note that the cardinality of C_i is $k_{ii} \det \mathbf{K}(i|i)$. Let $\widehat{X} = \{\hat{x}_1,\ldots,\hat{x}_n\}$. Define multiplication for the elements of $\widehat{X}$ by

$$\hat{x}_i\hat{x}_j = \hat{x}_j\hat{x}_i, \quad \hat{x}_i^2 = 0, \quad i,j = 1,\ldots,n. \qquad (2)$$

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Let $\hat{k}_{ij} = k_{ij}\hat{x}_j$ and $\hat{k}_{ij} = -\sum_{j\neq i} \hat{k}_{ij}$. Then the number of Hamiltonian cycles H_c is given by the relation

$$\left(\prod_{j=1}^{n} \hat{x}_j\right) H_c = \frac{1}{2}\hat{k}_{ij} \det \widehat{\mathbf{K}}(i|i), \qquad i = 1, \ldots, n. \tag{3}$$

The task here is to express (3) in a form free of any $\hat{x}_i$, $i = 1, \ldots, n$. The result also leads to the resolution of enumeration of Hamiltonian paths in a graph.

It is well known that the enumeration of Hamiltonian cycles and paths in a complete graph K_n and in a complete bipartite graph $K_{n_1 n_2}$ can only be found from *first combinatorial principles*. One wonders if there exists a formula which can be used very efficiently to produce K_n and $K_{n_1 n_2}$. Recently, using Lagrangian methods, Goulden and Jackson have shown that H_c can be expressed in terms of the determinant and permanent of the adjacency matrix. However, the formula of Goulden and Jackson determines neither K_n nor $K_{n_1 n_2}$ effectively. In this paper, using an algebraic method, we parametrize the adjacency matrix. The resulting formula also involves the determinant and permanent, but it can easily be applied to K_n and $K_{n_1 n_2}$. In addition, we eliminate the permanent from H_c and show that H_c can be represented by a determinantal function of multivariables, each variable with domain $\{0, 1\}$. Furthermore, we show that H_c can be written by number of spanning trees of subgraphs. Finally, we apply the formulas to a complete multigraph $K_{n_1 \ldots n_p}$.

The conditions $a_{ij} = a_{ji}$, $i, j = 1, \ldots, n$, are not required in this paper. All formulas can be extended to a digraph simply by multiplying H_c by 2.

The boundedness, property of Φ_0, then yields

$$\int_D \left|\overline{\partial}u\right|^2 e^{\alpha|z|^2} \geq c_6\alpha \int_D |u|^2 e^{\alpha|z|^2} + c_7\delta^{-2} \int_A |u|^2 e^{\alpha|z|^2}.$$

Let $B(X)$ be the set of blocks of Λ_X and let $b(X) = |B(X)|$. If $\varphi \in Q_X$ then φ is constant on the blocks of Λ_X.

$$P_X = \{\varphi \in M \mid \Lambda_\varphi = \Lambda_X\}, \qquad Q_X = \{\varphi \in M \mid \Lambda_\varphi \geq \Lambda_X\}. \tag{4}$$

If $\Lambda_\varphi \geq \Lambda_X$ then $\Lambda_\varphi = \Lambda_Y$ for some $Y \geq X$ so that

$$Q_X = \bigcup_{Y \geq X} P_Y.$$

Thus by Möbius inversion

$$|P_Y| = \sum_{X \geq Y} \mu(Y, X) |Q_X|.$$

Thus there is a bijection from Q_X to $W^{B(X)}$. In particular $|Q_X| = w^{b(X)}$.

$$W(\Phi) = \left\| \begin{array}{cccc} \dfrac{\varphi}{(\varphi_1, \varepsilon_1)} & 0 & \ldots & 0 \\[2ex] \dfrac{\varphi k_{n2}}{(\varphi_2, \varepsilon_1)} & \dfrac{\varphi}{(\varphi_2, \varepsilon_2)} & \ldots & 0 \\[2ex] \hdotsfor{4} \\[1ex] \dfrac{\varphi k_{n1}}{(\varphi_n, \varepsilon_1)} & \dfrac{\varphi k_{n2}}{(\varphi_n, \varepsilon_2)} & \ldots \quad \dfrac{\varphi k_{n\,n-1}}{(\varphi_n, \varepsilon_{n-1})} & \dfrac{\varphi}{(\varphi_n, \varepsilon_n)} \end{array} \right\|$$

References

[1] Walter Schmidt. *Using Common PostScript Fonts With LaTeX. PSNFSS Version 9.2*, September 2004. `http://ctan.tug.org/tex-archive/macros/latex/required/psnfss`.

[2] Michael Downes and Barbara Beeton. *The **amsart, amsproc, and amsbook** document classes*. American Mathematical Society, August 2004. `http://www.ctan.org/tex-archive/macros/latex/required/amslatex/classes`.