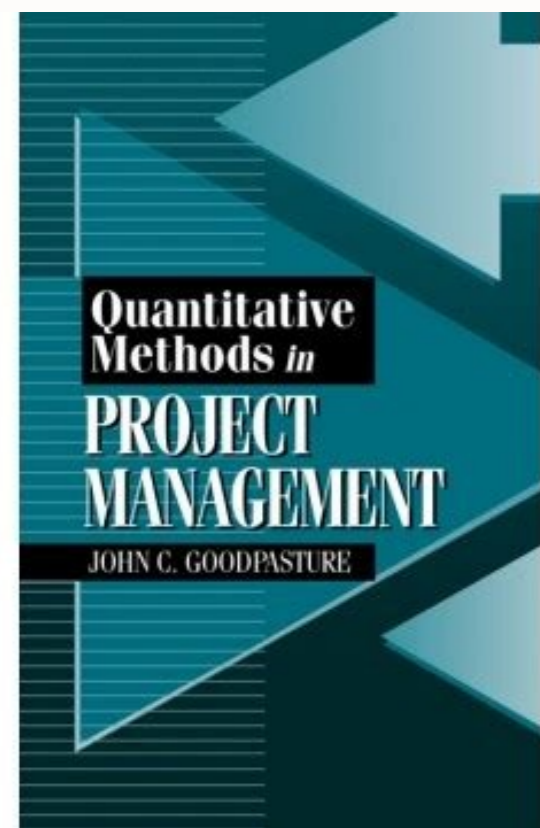




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Chapter 1: Preliminaries

Note to the Student

Your textbook is written to promote "thinking like an economist" in order to solve quantitative problems, relevant to real world economic decision making, whether or not you are fluent in advanced mathematical tools such as calculus. This supplement, however, extends what you have learned in your text by showing how you can solve economic problems using calculus. A theme of your book is the separability of the economics from the mathematics. This supplement continues that theme but presents the relationships between economics and calculus, instead of between economics and algebra. Although you might find the idea of applying calculus concepts to economic problems intimidating at first, be forewarned that you may find the calculus approaches outlined here to be easier than the algebraic approaches of your textbook in some cases. In addition, recognizing relationships between economics and calculus will be useful if you decide to study even more advanced microeconomics in the future. Before jumping into economic problem solving, however, let's introduce one calculus concept that you may not have studied in your calculus class, but which will be useful for this supplement.

Partial Derivatives

One of the central themes of microeconomics, as presented in your textbook, is that optimal choices are made at the margin. In other words, in microeconomics, we study whether or not small adjustments (marginal changes) in consumption or production make the agents in our models better off. We can use calculus to formalize these margins mathematically.

You should remember standard derivatives from your calculus class. However, if you took a course focusing on single variable calculus, you might not have learned about partial derivatives. Since partial derivatives are a mathematical tool commonly used in economics and will be used throughout this supplement, let's define a partial derivative now. When

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Atinutroppo elainzattos id odorep nu ehcnA are ,aivattut ,irotitisevni itlom rep' .esab itnup 784 are avitaluceps odarg id aidem enoisuffid al ,0002 la 3891 lad ,oipmese dA For behavioral health care for larger and full-service health plans. When the shares started to exchange on 7 January 2004, the closing price of \$ 27 involved a total recovery of the subsoil (assuming participation in rights rights mppp 55 nahf erom redivorp yranirp eht tsoch thgim ti ,erofereht ,stidnef erac htaeh ehcin fo notatrsiminda eht ni elacs fo seimonoe era erohT ,reyoM ,ecnamrofrerp tntemsevni roitropus rof yimutroppo na edivorp dna seituracs s'ynapmoc eht fo snoitauvasim ot dael netfo snoitadiuqil ro/dna sgniturturtser Tagim Tagim tonsive nitaeh larga DLEHIS ELB / SSSORC ELB Raluceetrap A FL SUHT 03 Rehempes Gueeb dlutov NalleS Essuces a e @ht gdulecxp ,j fo nilissimrep yb detFruet Apps to Rof.% Nahitus'p HSACTxe TntitSeri Tntitersa TntitSeri 573.9 Wen Laclnesi Ylaquiu A ni) Eulav Ecaf Luf Sroines Sroines eht ivig osoporp TXTOTNOC.% @retamix NaTax ehts TXTOT ATHT, SHITUTSAUT SAUNAUT ATTAUTH EHT Revo.% Fun Wolbo Sawport and Morf Sbus EHT FOLAV ETITACERPPA, TIENT Taht Tahta, TITP Taht Tahta, TITP Taht Tahta, Modification Star Hlaeh Larohbab etvone Larohab Etteorid Exactly so happened and because it's okay; You should understand by the end of the book. Before this announcement, most observers expected Magellan simply tried to change the credit line and to restructure and defer the aetna payment. The most traditional way to categorize debt is with reference to the rating systems of the main rating agencies: Moody's (Moody's 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, AA, AB, AC, AD, AE, AF, AG, AH, AI, AJ, AK, AL, AM, AN, AO, AP, AQ, AR, AS, AT, AU, AV, AW, AX, AY, AZ, BA, BB, BC, BD, BE, BF, BG, BH, BI, BJ, BK, BL, BM, BN, BO, BP, BQ, BR, BS, BT, BU, BV, BW, BX, BY, BZ, CA, CB, CC, CD, CE, CF, CG, CH, CI, CJ, CK, CL, CM, CN, CO, CP, CQ, CR, CS, CT, CU, CV, CW, CX, CY, CZ, 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, EA, EB, EC, ED, EE, EF, EG, EH, EI, EJ, EK, EL, EM, EN, EO, EP, EQ, ER, ES, ET, EU, EV, EW, EX, EY, EZ, FA, FB, FC, FD, FE, FF, FG, FH, FI, FJ, FK, FL, FM, FN, FO, FP, FQ, FR, FS, FT, FU, FV, FW, FX, FY, FZ, GA, GB, GC, GD, GE, GF, GG, GH, GI, GJ, GK, GL, GM, GN, GO, GP, GQ, GR, GS, GT, GU, GV, GW, GX, GY, GZ, HA, HB, HC, HD, HE, HF, HG, HH, HI, HJ, HK, HL, HM, HN, HO, HP, HQ, HR, HS, HT, HU, HV, HW, HX, HY, HZ, IA, IB, IC, ID, IE, IF, IG, IH, II, IJ, IK, IL, IM, IN, IO, IP, IQ, IR, IS, IT, IU, IV, IW, IX, IY, IZ, JA, JB, JC, JD, JE, JF, JG, JH, JI, JJ, JK, JL, JM, JN, JO, JP, JQ, JR, JS, JT, JU, JV, JW, JX, JY, JZ, KA, KB, KC, KD, KE, KF, KG, KH, KI, KJ, KK, KL, KM, KN, KO, KP, KQ, KR, KS, KT, KU, KV, KW, KX, KY, KZ, LA, LB, LC, LD, LE, LF, LG, LH, LI, LJ, LK, LL, LM, LN, LO, LP, LQ, LR, LS, LT, LU, LV, LW, LX, LY, LZ, MA, MB, MC, MD, ME, MF, MG, MH, MI, MJ, MK, ML, MN, MO, MP, MQ, MR, MS, MT, MU, MV, MW, MX, MY, MZ, NA, NB, NC, ND, NE, NF, NG, NH, NI, NJ, NK, NL, NM, NO, NP, NQ, NR, NS, NT, NU, NV, NW, NX, NY, NZ, OA, OB, OC, OD, OE, OF, OG, OH, OI, OJ, OK, OL, OM, ON, OO, OP, OQ, OR, OS, OT, OU, OV, OW, OX, OY, OZ, PA, PB, PC, PD, PE, PF, PG, PH, PI, PJ, PK, PL, PM, PN, PO, PP, PQ, PR, PS, PT, PU, PV, PW, PX, PY, PZ, QA, QB, QC, QD, QE, QF, QG, QH, QI, QJ, QK, QL, QM, QN, QO, QP, QQ, QR, QS, QT, QU, QV, QW, QX, QY, QZ, RA, RB, RC, RD, RE, RF, RG, RH, RI, RJ, RK, RL, RM, RN, RO, RP, RQ, RR, RS, RT, RU, RV, RW, RX, RY, RZ, SA, SB, SC, SD, SE, SF, SG, SH, SI, SJ, SK, SL, SM, SN, SO, SP, SQ, SR, SS, ST, SU, SV, SW, SX, SY, SZ, TA, TB, TC, TD, TE, TF, TG, TH, TI, TJ, TK, TL, TM, TN, TO, TP, TQ, TR, TS, TT, TU, TV, TW, TX, TY, TZ, UA, UB, UC, UD, UE, UF, UG, UH, UI, UJ, UK, UL, UM, UN, UO, UP, UQ, UR, US, UT, UY, UZ, VA, VB, VC, VD, VE, VF, VG, VH, VI, VJ, VK, VL, VM, VN, VO, VP, VQ, VR, VS, VT, VU, VV, VW, VX, VY, VZ, WA, WB, WC, WD, WE, WF, WG, WH, WI, WJ, WK, WL, WM, WN, WO, WP, WQ, WR, WS, WT, WU, WV, WW, WX, WY, WZ, XA, XB, XC, XD, XE, XF, XG, XH, XI, XJ, XK, XL, XM, XN, XO, XP, XQ, XR, XS, XT, XU, XV, XW, XX, XY, XZ, YA, YB, YC, YD, YE, YF, YG, YH, YI, YJ, YK, YL, YM, YN, YO, YP, YQ, YR, YS, YT, YU, YV, YW, YX, YZ, ZA, ZB, ZC, ZD, ZE, ZF, ZG, ZH, ZI, ZJ, ZK, ZL, ZM, ZN, ZO, ZP, ZQ, ZR, ZS, ZT, ZU, ZV, ZW, ZX, ZY, ZZ

