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page 1 of 4
             APM 236 H-problem set 6
Massimize 7' = 3 w, +8 wz subject to the
           constrainte WI+2Wz
                    2W_1 + W_2
                       W_1 + 4W_2
                                  \leq q, w_1 \geq 0, w_2 \geq 0.
                       WITGWZ
Pg. 165 4.
Honimise Z'= 10w, -5w, -8w, +15w4+20ws subject
to the constraints 4w, -4w, -3 w, + 3 w, + ws = 2
             · 2w, -2w, -5w, +5w, + w, 21
                 5w,-5w2-4w3+4w4+ w;= = 3
                 5 W, -5 W2 - W3 + W4 + W5 = 4,
        W, 20, W, 20, W, 20, W, 20, W, unrestricted
or equivalently
Maximuse z'= -10 w, +5 w, +8 w, -15 w4+20 w, subject
to the constraints - 4W, +4W2 + 3W3 - 3 W4 + W5 = -2
                 -2w, +2w2+5w3-5w4+w5=-1
                 -5w, +5w, +4w, -4w4+ W5==-3
                 - 5W, + 5W2 + W3 - W4 + W5 4-4.
       W, 20, W, 20, W, 20, W, 20, Ws unrestricted
pq.166 6.
Maximila 2 = 1
constraints
                    12W, -6W2 subject to the
4W, -3W, 55
                     \frac{2w_{1}-2w_{2}\leq2}{w_{1}-3w_{2}=6}, w_{1}\geq0, w_{2}\geq0.
or equivalently =
Minimire = !! =
constraints
                    -12w, +6w, subject to the
                     -2w_{1}+2w_{2}=-2
-w_{1}+3w_{2}=-6, w_{1}\geq0, w_{2}\geq0.
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pg.183 9. The dual problem is:

Minimize 2'= 6 w, + 12w, + 5 w, subject to the constraints 2w, + 5 w, \geq 9

\[
\text{W}, + 4 w, + 2w, \geq 14
\]

\[
\text{W}, + \text{W}, \geq 2, \text{W}, \geq 0, \geq 0, \text{W}, \geq 0, \ge

Direct substitution (in the primal problem) shows that $X_1 = \frac{5}{26}$, $X_2 = \frac{27}{2}$ is fearible for the primal problem and that $Z_2 = 44$ there. The corollary of the weak cluality theorem (ie, theorem 3.6) implies that the two solutions are optimal for their respective problems.

pg.184 11. The clual problem is:

Minimine $Z' = 12W_1 + 10W_2 + 10W_3$ subject

to the constraints $2W_1 + W_2 + 3W_3 \stackrel{?}{=} 4$ $3W_1 + 4W_2 + W_3 \stackrel{?}{=} 3$ $W_1 + 2W_2 + W_3 \stackrel{?}{=} 3$ $W_1 \stackrel{?}{=} 0, W_2 \stackrel{?}{=} 0, W_3 \stackrel{?}{=} 0$.

Direct substitution of [X, X, X] = [2 0 4] into the primal constraints show there is slack in the first constraint (only). So at anal optimality, w, = 0.

pg-18+ 11. (cont'o	d) A 600	by con	Alexa	ntery	t or many the former among the first the second of the					
slackness and since x, #0, x, #0, at dual optimality there is no slack in the first and										
third delal constraints. The solution of										
$2w_1 + w_2 + 3w_3 = 4$ $w_1 + 2w_2 + w_3 = 3$										
which satisfies w=0 is w=0, w=1,										
and this is goting At their respect	al for th	2 Clical	ANGLE	W,	ta Baraka Malijanja a saka Nagarang punitasi a Kumunia Pari Nojina Punitasia Nasa Assarina.					
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