ECON 204 Sec 02
Quiz 2
Dr. Kevin Hasker

1. *(2 Points)* **Honor Code:** Please read and sign the following statement:

   I promise that my answers to this test are based on my own work without reference to any notes, books, or the assistance of any other person during the test. As well, I will not assist others nor use a calculator or other electronic aid for calculation.

   Name and Surname: _

   Student ID: _

   Signature:

   _

2. *(18 points total)* In the following game:

   Player 2

	α	β	δ	γ
A	4; 1	7; 2	$7; 4^{12}$	3; −3
B	$6; 3^{12}$	3; 2	5; 1	$8; -3^{1}$
C	1; 5	$8; 8^{2}$	4; 3	3; 7
D	$5; 3^{2}$	$9; 1^{1}$	2; −4	6; 2

   Player 1 (rows A, B, C, D)

   Player 2

	α	β	δ	γ
A	1; 3	$6; 8^{12}$	6; 4	5; 2
B	1; 2	1; 5	$7; 7^{2}$	5; 6
C	$3; 5^{12}$	2; 1	5; 4	$7; 2^{1}$
D	$2; 5^{2}$	4; −1	$9; 1^{1}$	3; 4

   Player 1 (rows A, B, C, D)

   Player 2

	α	β	δ	γ
A	1; −1	3; −2	$4; 2^{12}$	4; 1
B	$5; 3^{12}$	$6; -2^{1}$	3; 2	3; 1
C	$3; 3^{2}$	5; 1	1; −1	$9; 2^{1}$
D	2; 3	3; 4	1; 3	$6; 6^{2}$

   Player 1 (rows A, B, C, D)

   Player 2

	α	β	δ	γ
A	2; 1	$3; 2^{12}$	−1; −2	4; −1
B	$6; 6^{2}$	−1; 4	3; 2	4; 3
C	4; 1	2; 3	$5; 4^{12}$	$6; -1^{1}$
D	$9; 3^{1}$	1; 1	$2; 4^{2}$	5; 1

   Player 1 (rows A, B, C, D)

   (a) *(11 points)* Find the Best Responses of both people. For the best response of Player 2 to B explain your reasoning carefully. *For the rest you may mark them in the table above but you will lose two points if you do not explain your notation below.*

Solution 1 *I put a 1 in the upper right hand corner when a strategy is a best response for player 1, and a 2 for player 2. (one point per best response, and if you can't figure out what they are doing don't give them any points.)*

(3 points) For the BR to B I will use this game:

Player 2

	α	β	δ	γ
A	$2;1$	$3;2^{12}$	$-1;-2$	$4;-1$
B	$6;6^2$	$-1;4$	$3;2$	$4;3$
C	$4;1$	$2;3$	$5;4^{12}$	$6;-1^1$
D	$9;3^1$	$1;1$	$2;4^2$	$5;1$

Player 1 is to the left of rows A, B, C, D.

$$u_2(B,\alpha) = 6 > u_2(B,\beta) = 4 > u_2(B,\gamma) = 3 > u_2(B,\delta) = 2$$

since α gives the highest payoff it is the best response.

(b) *(7 points)* Find the Nash Equilibria Strategy Profiles. For one of them explain why it is an equilibrium. *Please note you will only get half credit if you write down the payoffs, not the strategies.*

Solution 2 *These are the squares that have a 1 and a 2 in the upper right hand corner, for the game:*

Player 2

	α	β	δ	γ
A	$4;1$	$7;2$	$7;4^{12}$	$3;-3$
B	$6;3^{12}$	$3;2$	$5;1$	$8;-3^1$
C	$1;5$	$8;8^2$	$4;3$	$3;7$
D	$5;3^2$	$9;1^1$	$2;-4$	$6;2$

Player 1 is to the left of rows A, B, C, D.

these are (A, δ) and (B, α) (two points per equilibrium, or one point if they write down the payoffs).

(3 points) (B, α) is a Nash equilibrium because each person is doing the best for themselves given what the other is doing, or in other words $B = BR_1(\alpha)$ and $\alpha = BR_1(B)$