Midterm 1 Solution Key – Economics 101
(Fall 2024)

Regrade policy: If you would like your test regraded, please submit a written statement to explain why, within one week of the date the exams are returned to class. Your entire test will be regraded, so there is a possibility that points could be lost rather than gained.

Multiple Choice:

	version A	version B
1	C	B
2	D	C
3	C	A
4	A	B
5	B	B
6	B	D
7	D	A
8	A	D

Problem 1: Neoclassical Model

a) Version A:

$Y^s = 4*1*2 = 8$

$Y^d = C + I + G = [1 + 0.5(8 - 2)] + [4 - 10r] + 2$

setting $Y^s = Y^d$: $8 = 10 - 10r$

so $-2 = -10r$ so $r = 0.20$

real wage = MPL = $(1/2)\ 4\ K^{1/2}\ L^{-1/2} = 2 * 1 / 2 = 1$

Version B:

$Y^s = 4*2*1 = 8$

$Y^d = C + I + G = [2 + 0.5(8 - 2)] + [3 - 10r] + 1$

setting $Y^s = Y^d$: $8 = 9 - 10r$

so $-1 = -10r$ so $r = 0.10$

real wage = MPL = $(1/2)\ 4\ K^{1/2}\ L^{-1/2} = 2 * 2 / 1 = 4$

b,c)

	version A	version B
9	A	B
10	B	A
11	C	C
12	A	B
13	C	A
14	B	C

d) Because the production function has decreasing marginal product of labor, a fall in labor supply raises the marginal product of labor. This raises the real wage since in a competitive market the profit-maximizing firms has to pay more for labor if the marginal worker is more

productive. (To get full credit, an answer must include an explanation that a fall in labor makes the marginal product of labor rise).

Problem 2:

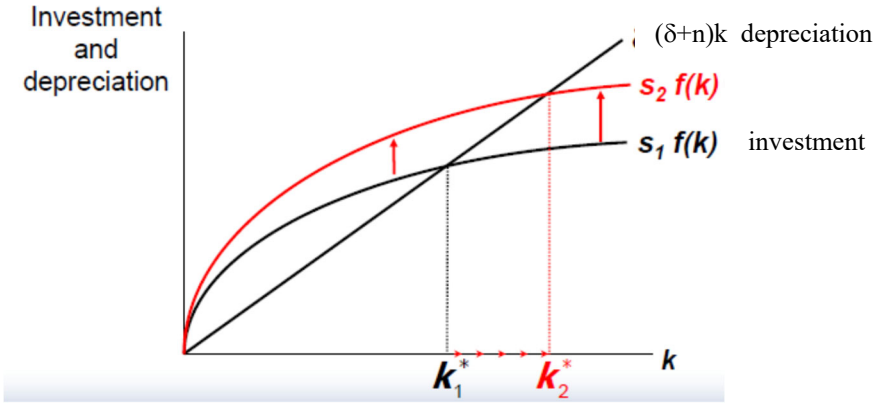
a) Version A:

$$MPK = \delta + n$$
$$(1/2)*0.4k^{-1/2} = 0.1+0.1$$
$$0.2k^{-1/2} = 0.2$$
$$k^{-1/2} = 1$$
$$k = 1$$

Version B:

$$MPK = \delta + n$$
$$(1/2)*0.6k^{-1/2} = 0.2+0.1$$
$$0.3k^{-1/2} = 0.3$$
$$k^{-1/2} = 1$$
$$k = 1$$

b)



c)

	version A	version B
15	B	A
16	A	B
17	A	B
18	C	C