Your version is □☒□□□. Please copy your version into your answer form. Please answer the questions first here (and on the scratch paper). Copy your answers only at the end into the answer form. You will return only the answer form, you will keep this task sheet. Good luck!

There are different versions. You find the correct answers always in different places (a,b,c,d,e), the answers are still the same.

Question: Demand and supply are given by $Q_D = 35 - P$ and $Q_S = P + P^2$. What is the price in equilibrium? (assume that the price must be positive) (2 points)

1:	a other value	b 1	c (5)	d 7	e 30

Question: Be $f = 2x^2 + x + 3$. What is $f'(-2)$? (1 point)

2:	a other value	b -2	c 2	d 4	e (−7)

Question: Find the derivative of $x^2 + x^{-2}$ (1 point)

3:	a other value	b $(2x - \frac{2}{x^3})$	c $2x - 2x^{-2}$	d $2x - \ln x^2$	e $x^2 + \frac{1}{x^2}$

Question: Find the derivative of e^{x^2+1} (1 point)

4:	a other value	b $2x\,e^{2x}$	c $(2x\,e^{x^2+1})$	d e^{x^2+1}	e e^{2x}

Question: Find the derivative of $\frac{1}{x}\ln x$ (1 point)

5:	a other value	b $\frac{\ln x}{x}$	c $(\frac{1-\ln x}{x^2})$	d $\frac{\ln x}{x^2}$	e $\frac{1-1/x}{x^2}$

Question: Be $y = \sin x$. What is dx/dy? (2 points)

6:	a other value	b $\cos x$	c $-\cos x$	d $(1/\cos x)$	e 0

Question: If $f'(x) = \frac{x+1}{2x-1}$, what is $f''(x)$? (1 point)

7:	a other value	b $\frac{x+1}{2}$	c $(\frac{-3}{(2x-1)^2})$	d $\frac{x+1}{(2x-1)^2}$	e $\frac{1}{2}$

Question: If $f'(x) = \ln\frac{1}{x}$, what is $f''(x)$? (1 point)

8:	a other value	b $(-\frac{1}{x})$	c x	d $-x$	e $\frac{1}{x}$

Question: Be $f(x) = 2x^3 + 3x^2 - 36x + 17$. Where does $f(x)$ have a local maximum? (3 points)

9:	a other value	b (-3)	c $1/2$	d 2	e 3

Question: Be $f(x,y) = e^x e^{1-y}$. What is the value of $f_{xy}(3,4)$? (3 points)

10:	a other value	b (-1)	c e^{x-y}	d e^{x-y-1}	e $-e$

Question: Be $f(x,y) = \frac{x-y}{x+y}$. What is the value of $f_{xy}(3,1)$? (4 points)

11:	a other value	b $\frac{1}{8}$	c $(\frac{1}{16})$	d $-\frac{1}{16}$	e $-\frac{1}{8}$

Question: Be $f' = -2x^2 + 6x - 4$. For which value of x does f have a maximum? (2 points)

12:	a other value	b $(x=2)$	c $x=0$	d $x=1$	e $x=\frac{3}{2}$

Question: Maximise $f(x,y) = 2y^2 + x^2$ subject to the constraint $y + 2x = 6$. Which value for y satisfies the first-order condition? (4 points)

13:	a other value	b $(\frac{2}{3})$	c 2	d $\frac{8}{3}$	e 4

Question: Minimize $f(x,y) = 2x - y$ subject to the constraint $y^2 + x^2 = 5$. Which positive value for y satisfies the first-order condition? (5 points)

14:	a other value	b (1)	c 2	d 5	e $\frac{1}{2}$

Question: Find $\int (1 + \ln x)\,dx$ (3 points)

15:	a other value	b $x + \frac{1}{x} + C$	c $x\ln x + x + C$	d $(x\ln x + C)$	e $\ln x + C$

Question: Find $\int_1^2 \left(x + \frac{1}{x}\right)\,dx$ (3 points)

16:	a other value	b $\ln 2 + \frac{1}{2}$	c $(\ln 2 + \frac{3}{2})$	d $\frac{1}{2}$	e $\ln 2 + 2$

Question: What is the value of $\int_2^0 f(x)\,dx$ if $F(x) = a\,x - b$? (2 points)

17:	a other value	b 0	c $(-2a)$	d $2b - 2a$	e $2a$

Question: What is $\frac{d}{dt}\int_t^1 2x\,dx$? (2 points)

18:	a other value	b x^2	c $-2x$	d $2t$	e $(-2t)$

Question: Which function $y(x)$ is a general solution to $\frac{dy}{dx} = y + 1$? (4 points)

19:	a other value	b Ce^x	c C	d $(Ce^x - 1)$	e $Ce^{-x} - 1$

Question: Which function $y(x)$ is a solution to $\frac{dy}{dx} = \frac{y}{x}$ with initial conditions $y(2) = 2$? (5 points)

20:	a other value	b $y = 2e^{x-2}$	c $y = Cx$	d $(y = x)$	e $y = 2e^{x^2/2 - 2}$

total number of points: 50
obtainable through randomisation: 10
sufficient to pass: 25