

①

Question 1 - Matrices

i) $\begin{pmatrix} -18 & -4 & 9 \\ 14 & -75 & 13/2 \\ -6 & 6 & 7/2 \end{pmatrix}$

ii) $\begin{pmatrix} -102/2 & 18 & 27 \\ -3 & 8 & 43 \\ 48 & -18 & -43 \end{pmatrix}$

~~iii) $\begin{pmatrix} -102/2 & 18 & 27 \\ -3 & 8 & 43 \\ 48 & -18 & -43 \end{pmatrix}$~~

iii) $\begin{pmatrix} 29 & 124 \\ -17 & 35 \\ 8 & 39 \end{pmatrix}$

iv) Not possible

v) -35

vi) -71

vii) $\begin{pmatrix} 6 & 7 & 15/2 \\ -3 & 7 & 7 \\ 3 & -9 & 3 \end{pmatrix}$

viii) Not Possible

b) ~~Find~~ $15x^2 + 4x - 17$

$$x = \frac{-4 \pm \sqrt{(4)^2 - 4(15)(-17)}}{2(15)}$$

or

$x = -1.21$

$x = 0.94$

c) $W = \begin{pmatrix} 2 & 4x & -5 \\ 4 & x & 0 \\ 1 & (x+1) & 3 \end{pmatrix}$

$W = 2$

c)

$$(ii) \int \frac{21x^2 + 10x - 3}{7x^3 + 5x^2 - 3x - 1} dx$$

$$\frac{10x + 21x^2 - 3}{x(21x^3 + 20x^2 - 18x - 12)} + C$$

$$\frac{x(5x + 21x^2 - 3)}{x(21x^3 + 20x^2 - 18x - 12)} + C$$

b

$$(i) = \frac{6(3x \sin(3x) + \cos(3x))}{9} + C$$

$$(ii) \int_1^2 3x e^{2x} dx$$

$$\int x^2 dx$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} \text{ with } n=2$$

$$= \frac{x^3}{3}$$

$$3e^2 \cdot \int x^2 dx$$

$$= e^2 x^3$$

$$= e^2 x^3 + C$$

$$= 7e^2$$

$$-200^s - 400$$

$$d) \quad x = 5$$

$$y = 2$$

$$z = -1$$

Question ~~7/19/19~~

Q 3

a)

$$(i) \frac{50x^9}{9} + \frac{60x^7}{7} - 20x^5 - 40x^3 + C$$

$$\frac{x^3(35x^6 + 54x^4 - 126x^2 - 252)}{63} + C$$

(ii)

$$\frac{x(e^3 x (2e^2(e^3 x + 3) + 3) + 12)}{6} + C$$

$$\frac{x(2e^8 x^2 + (6e^5 + 3e^3)x + 12)}{6} + C$$

(iii)

$$\int x^3(3x^2+2)^3 dx + 4 \int x dx + 3 \int 1 dx$$
$$\frac{(3x^2+2)^5}{90} - \frac{(3x^2+2)^3}{36} + 2x^2 + 3x + C$$

$$= \frac{x(54x^9 + 135x^7 + 120x^5 + 40x^3 + 60)}{20} + C$$

$$= \frac{24614}{20}$$