

Solution Unit II Test 3 (2017)

1. (a) $|A| = 2$

(b) $\begin{pmatrix} 2 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 2 \end{pmatrix}$

(c)

$$A^{-1} = \frac{1}{2} \begin{pmatrix} 6 & 8 & -4 \\ -1 & -1 & 1 \\ -8 & -12 & 6 \end{pmatrix}$$

(d) $\begin{pmatrix} 3 \\ 2 \\ 1 \end{pmatrix}$

2. (a) $\left(\begin{array}{ccc|c} 1 & 1 & -1 & 6 \\ 2 & -1 & 3 & -2 \\ 0 & 2 & 1 & 5 \end{array} \right)$

(b)

$$x = -1, y = 3, z = 2$$

(c) Let $z = t$

$$y = \frac{5}{3}t + \frac{14}{3}$$

$$x = -\frac{2}{3}t + \frac{4}{3}$$

3. (a) (i)

$$y = Ae^{-\cos t}$$

(ii) $y = 50e^{-(1+\cos t)}$

1 mark - simplification

(b) (i) $y = 7$

4.

$$y = -\frac{\cos x}{\sin^2 x} + \frac{\cos^3 x}{3 \sin^2 x} + \frac{c}{\sin^2 x}$$

5. C.F: $x = Ae^{-3t} + Be^{-2t}$

$$x = -e^{-3t} + e^{-t}$$

6. (i) 9828

(ii) 0.0812

(ii) 3360

Number of ways = 4494

(iii) 480

$$P = \frac{2}{3}$$

7. (i) 360

720

Total = 1800 ways

(ii) 120