Unit 5 - Week 3

Assignment 3

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-10-07, 23:59 IST.

1) Which one of the following matrices is NOT a positive definite matrix? *4 points*

$\begin{pmatrix} 1 & -1 \\ -1 & 2 \end{pmatrix}$

$\begin{pmatrix} 1 & 3 \\ 3 & 10 \end{pmatrix}$

$\begin{pmatrix} 2 & -1 & 0 \\ -1 & 2 & -1 \\ 0 & -1 & 2 \end{pmatrix}$

$\begin{pmatrix} 2 & -1 & 0 \\ -1 & 2 & -1 \\ 0 & -1 & -1 \end{pmatrix}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\begin{pmatrix} 2 & -1 & 0 \\ -1 & 2 & -1 \\ 0 & -1 & -1 \end{pmatrix}$

2) The potential energy of a particle of mass m is given by *4 points*

$U(x) = a\sin(k^2x - \pi/2), a > 0, k^2 > 0$.

The angular frequency of small oscillations of the particle about $x = 0$ is

$k^2\sqrt{\frac{2a}{m}}$

$k^2\sqrt{\frac{a}{m}}$

$k^2\sqrt{\frac{a}{2m}}$

$2k^2\sqrt{\frac{a}{m}}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$k^2\sqrt{\frac{a}{m}}$

3) Which of the following is a solution of $\frac{d^2u(x)}{dx^2} = k^2u(x),$ for k real ? *2 points*

e^{-kx}

$\sin kx$

$\cos kx$

$\sin hx$

No, the answer is incorrect.
Score: 0
Accepted Answers:
e^{-kx}