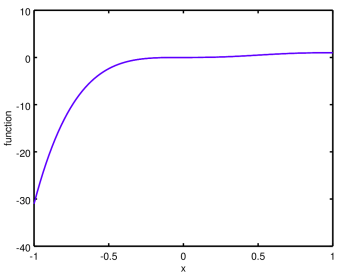
X

Unit 5 - Week 4

Assignment 4

The due date for submitting this assignment has passed. **Due on 2018-09-05, 23:59 IST.**
As per our records you have not submitted this assignment.

1) Using GNU Octave, find out which of the following polynomials represents the given plot in the x-range of -1 to 1: ***1 point***



- $x^3(10 - 15x + 6x^2)$
- $x^3(10 + 15x + 6x^2)$
- $x^3(10 - 15x - 6x^2)$
- $x^3(10 + 15x^2 + 6x)$

- -0.37907 and 0.93681
- 0.37907 and -0.93681
- 0.97787 and -0.20091
- -0.97787 and 0.20091

No, the answer is incorrect.
Score: 0

Accepted Answers:
-0.37907 and 0.93681

Module 6 - Lecture 26 : Regular solution using octave

3) With increase in temperature, the relative contribution to the enthalpy term in the equation of ΔG_{mix} of a regular solution : ***1 point***

(Hint: $\Delta G_{mix} = \Omega x(1-x) + RT(xln(x) + (1-x)ln(1-x))$)

Module 6 - Lecture 27 : Constructing phase diagram

- increases
- decreases
- does not change
- increases and then decreases

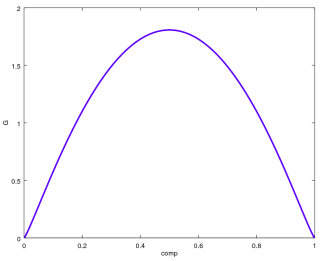
No, the answer is incorrect.
Score: 0

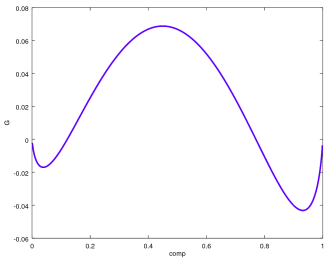
Accepted Answers:
decreases

Module 6 - Lecture 28 : Plotting spinodal

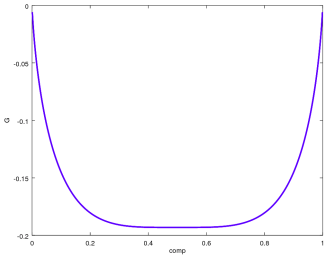
4) Which of the following shows the correct ΔG v/s x plot corresponding to the temperature at the beginning of phase separation (i.e. critical temperature) ***1 point***

Module 7 - Lecture 29 : Non-dimensionalisation of diffusion equation





Module 7 - Lecture 30 : Diffusion and Fourier law of heat conduction



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Weekly Feedback

Quiz : Assignment 4

Solution assignment 4

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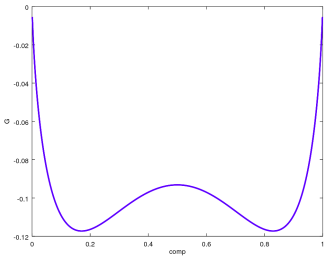
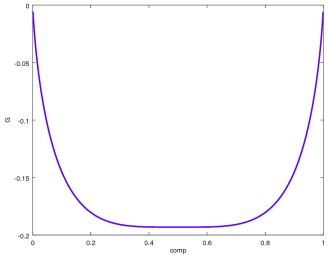


No, the answer is incorrect.
Score: 0

Accepted Answers:



5) Which of the following codes calculates and plots ΔG_{mix} for an ideal solution: ***1 point***

```
x = 0.001:0.001:0.999;
deltaG = (x.*ln(x).+(1.-x).*ln(1.-x));
plot(x,deltaG);
```

```
alpha = 0.1;
x = 0.001:0.001:0.999;
deltaG = alpha.*x.*(1.-x).+(x.*log(x).+ (1.-x).*log(1.-x));
plot(x,deltaG);
```

```
alpha = 0.1;
x = 0.001:0.001:0.999;
deltaG = alpha.*x.*(1.-x).+(x.*ln(x).+(1.-x).*ln(1.-x));
plot(x,deltaG);
```

```
x = 0.001:0.001:0.999;
deltaG = x.*log(x).+(1.-x).*log(1.-x);
plot(x,deltaG);
```

No, the answer is incorrect.
Score: 0

Accepted Answers:

```
x = 0.001:0.001:0.999;
deltaG = x.*log(x).+(1.-x).*log(1.-x);
plot(x,deltaG);
```

6) Let x = [1 2 3] and y = [6 7 8]. Which of the following commands in GNU Octave give the element wise product of the two vectors? ***1 point***

c = x*y;

```
for i = 1: 3
for j = 1: 3
c (i,j) = x (i) * y (j) ;
endfor
```

endfor

- c = x.*y;
- c = x**y;

No, the answer is incorrect.
Score: 0

Accepted Answers:
*c = x.*y;*

7) Which of the following is an option of the $fminbnd$ function which will act as an end criteria for iterations while computing the minima? ***1 point***

- eval
- gca
- IterEnd
- TolX

No, the answer is incorrect.
Score: 0

Accepted Answers:
TolX

8) Which of the following is the non-dimensionalized diffusion equation (where τ_o and l_o are the characteristic time and characteristic length respectively)? ***1 point***

- $\frac{\partial c}{\partial t} = \frac{D\tau_o^2}{l_o} \frac{\partial^2 c}{\partial x^2}$
- $\frac{\partial c}{\partial t} = \frac{D\tau_o}{l_o^2} \frac{\partial^2 c}{\partial x^2}$
- $\frac{\partial c}{\partial t} = \frac{Dl_o}{\tau_o^2} \frac{\partial^2 c}{\partial x^2}$
- $\frac{\partial c}{\partial t} = \frac{D\tau_o^2}{l_o^2} \frac{\partial^2 c}{\partial x^2}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\frac{\partial c}{\partial t} = \frac{D\tau_o}{l_o^2} \frac{\partial^2 c}{\partial x^2}$

9) Which of the following algorithms is used by the *fminsearch* function in GNU Octave? (Hint: Use help command) ***1 point***

- Golden section method
- Conjugate gradient method
- Nelder-Mead method
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
Nelder-Mead method

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