Jan 8, 2009

1. $y = -x/3 + 5/3$
2. x
3. -1
4. $2a/(2-a)$ if $|a| < 2$, diverges otherwise
5.
a) $-e^x/(e^x - 1)$
b) $-\ln|e^x - 1|$
7. $a \neq 2$
8. $(-1/4, 3/4, 1/4)$

Jan 27, 2009

1.
a) $3/(4e^2) + 1/4$
b) $y = x/e^3 - e - 3/(4e) + 1/4$
2. $x^2 - x + 1$
3. 1
4. $2(a-4)/(7-a)$ if $|a-4| < 3$, diverges otherwise
5.
a) $-(x + 1/4)e^{-4x}/4$
b) $1/16$
6. $1/3$, 1
7. $\begin{bmatrix} 7 & 0 & -3 & -1 \\ 15 & 1 & -7 & -2 \\ -6 & 0 & 3 & 1 \\ -2 & 0 & 1 & 0 \end{bmatrix}$
8. $w(1, -1, -1)$, $w \in \mathbb{R}$ (one degree of freedom)

Jan 4, 2011

1. 0
2. $x \neq k\pi$, $k \in \mathbb{Z}$
3. 1
4. $\alpha^2 \beta^2 \gamma$
5.
a) $\alpha = 2, \beta \neq 3$ impossible, $\alpha = 2, \beta = 3$ infinite solutions 1 d.o.f., $\alpha \neq 2$ unique solution
b) $(-6 + 5z, 3 - 3z, z)$, $z \in \mathbb{R}$
7. $y \neq 0$
9.
a) continuous on $\mathbb{R}$
b) -1
c) min
d) global
e) $3 + x + x^2$
f) $]-\infty, -1[$ and $]-1, +\infty[$
g) 1
10. 2

Jan 3, 2012

1. $ACB^{-1} - A$
2. $-3\pi/2$

3. $4/3$

4. $-1 - \pi/2$

5.

a) $r(A) = r(A|b) = 4$ unique solution

b) $x = 50, y = 25, z = 25, t = 50$

6. $\mathbb{R} \setminus \{-1, 1\}$

8. first $= 1200 \times 1023/1024$, second$= 480(4e^5 + 1)$. Second is larger

9.

a) continuous on $[0,8]$

b) Not differentiable at 3.

c) $x = 5$ local maximum

d) $L(5) = 30$ max, $L(0) = -10$ min