

**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.  $2$