## Problem 1

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已知x=6,y=5，利用符号表达式求z值.



### MATLAB Code

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| --- | --- |
|  | |
| 1  2  3  4  5  6  7  8  9  10 | *%% problem 1*  syms x y z  z = (x+1)./(sqrt(3+x)-y);  z = subs(z,x,6);  subs(z,y,5)  clearvars x y z |
|  | |

### Output

|  |  |
| --- | --- |
|  | |
|  | ans =    -7/2 |
|  | |

## Problem 2

化简表达式



### MATLAB Code

|  |  |
| --- | --- |
|  | |
| 1  2  3  4  5  6  7  8  9  10  11  12  13  14 | *%% problem 2*  *% problem 2-1*  syms beta1 beta2  f = cos(beta1)\*cos(beta2)+sin(beta1)\*sin(beta2);  simplify(f)  clearvars beta1 beta2 f  *% problem 2-2*  syms x  p = (4\*x^2+8\*x+3)/(1+2\*x);  simplify(p)  clearvars x p |
|  | |

### Output

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| --- | --- |
|  | |
|  | ans =    cos(beta1 - beta2)      ans =    2\*x + 3 |
|  | |

## Problem 3

用符号方法求下列极限或导数：











### MATLAB Code

|  |  |
| --- | --- |
|  | |
| 1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26 | *%% problem 3*  syms x a t  *% problem 3-1*  f = (x\*(exp(sin(x))+1)-2\*(exp(tan(x))-1))/(sin(x)^3);  limit(f,x,0)  *% problem 3-2*  f = (sqrt(x)-sqrt(acos(x)))/(sqrt(1+x));  limit(f,x,1,"right")  *% problem 3-3*  y = (1-cos(2\*x))/(x);  diff(y)  diff(y,2)  *% problem 3-4*  A = [a^x        t^3;       t\*cos(x)   log(x)];  dAdx = diff(A,x)  d2Adt2 = diff(A,t,2)  dAdxdt = diff(dAdx,t)  Clearvars |
|  | |

### Output

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| --- | --- |
|  | |
|  | ans =    -1/2      ans =    2^(1/2)/2      ans =    (2\*sin(2\*x))/x + (cos(2\*x) - 1)/x^2      ans =    (4\*cos(2\*x))/x - (4\*sin(2\*x))/x^2 - (2\*(cos(2\*x) - 1))/x^3      dAdx =    [a^x\*log(a), 0]  [ -t\*sin(x), 1/x]      d2Adt2 =    [0, 6\*t]  [0, 0]      dAdxdt =    [ 0, 0]  [-sin(x), 0] |
|  | |