

```

1      3
2      a)
3       $1a + 0b + 0c = 1$ 
4       $1e + 0f + 0g = 1$ 
5       $1e + 1f + 1g = 0$ 
6
7       $a = 1, e = 1$ 
8
9      b)
10      $s'(x)$ 
11      $= b + 2c(x-1) - (1/2)(x-1)(x-2) - (1/4)(x-1)^2$  for  $1 \leq x < 2$ 
12      $= f + 2g(x-2) + (1/2)(x-2)(x-3) + (1/4)(x-2)^2$  for  $2 \leq x \leq 3$ 
13     so:
14      $b + 2c - (1/4) = f$ 
15
16     c)
17      $s''(x)$ 
18      $= 2c - (x-1) - (x-2)/2$  for  $1 \leq x < 2$ 
19      $= 2g + (x-2) + (x-3)/2$  for  $2 \leq x \leq 3$ 
20      $s''(1) = 0$ 
21      $s''(3) = 0$ 
22      $2c - 0 + 1/2 = 0$ 
23      $2c = -1/2$ 
24      $c = -1/4$ 
25      $2g + 1 = 0$ 
26      $2g = -1$ 
27      $g = -1/2$ 
28
29     d)
30      $1 + f - 1/2 = 0$ 
31      $f = -1/2$ 
32      $b + 2(-1/4) - 1/4 = -1/2$ 
33      $b - 3/4 = -2/4$ 
34      $b = 1/4$ 
35
36     e)
37      $s(x)$  must be continuous at  $x=2$ :
38      $a + b + c = e$ 
39      $s''(x)$  must be continuous at  $x=2$ :
40      $2c - 1 = 2g - 1/2$ 

```