**Specialist Mathematics Unit 4 Investigation 3, 2016**

**Partial & Numerical Integration**

**Take Home Section – due Tuesday 21 June**

**Take Home Questions**. Complete these on separate paper.

Solutions:

Using the method of **Integration by Parts**, determine the following indefinite integrals:

**1.**  

Let *f(x)* = x Let *g’(x)* = sin x

then *f’(x)* = 1 *g(x)* = -cos x

 = - x cos x - 

= - x cos x + sin x + c

**2.** 

Let *f(x)* = x Let *g’(x)* = (x+2)5

then *f’(x)* = 1 *g(x)* = 

 = - 

=  - +c

= 

= 

= 

**3.** 

Let *f(x)* = x2 Let *g’(x)* = ex

then *f’(x)* = 2x *g(x)* = ex

 = - 

Consider  Let *f(x)* = 2x Let *g’(x)* = ex

then *f’(x)* = 2 *g(x)* = ex

= 2xex - 

= 2xex – 2ex + c

So = - 2xex + 2ex + c

= 

**4.** 

Let *f(x)* = x2 Let *g’(x)* = 

then *f’(x)* = 2x *g(x)* =

 = - 

= - +c

= 

= 

**5.** 

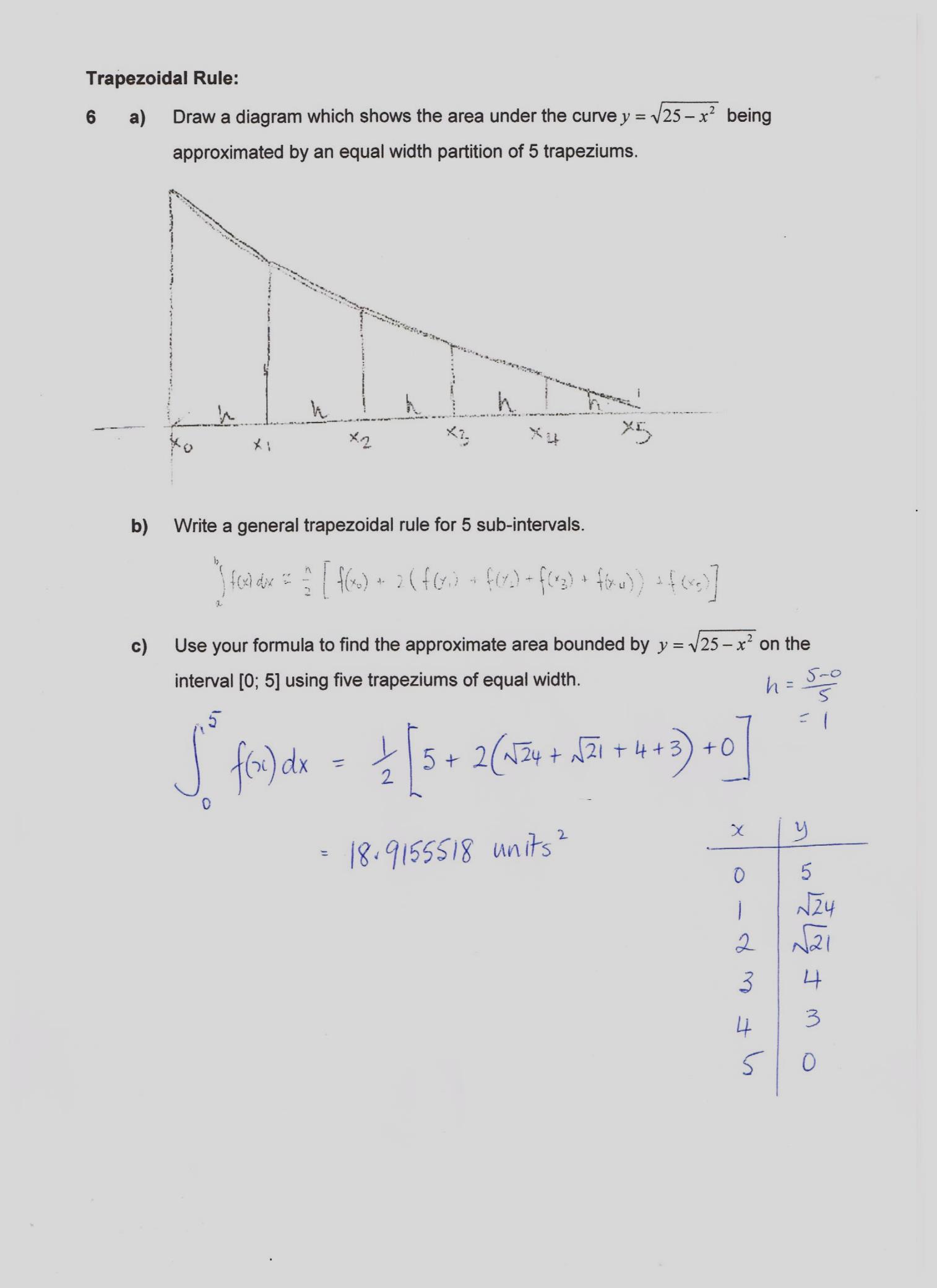
Let *f(x)* = Let *g’(x)* = 1

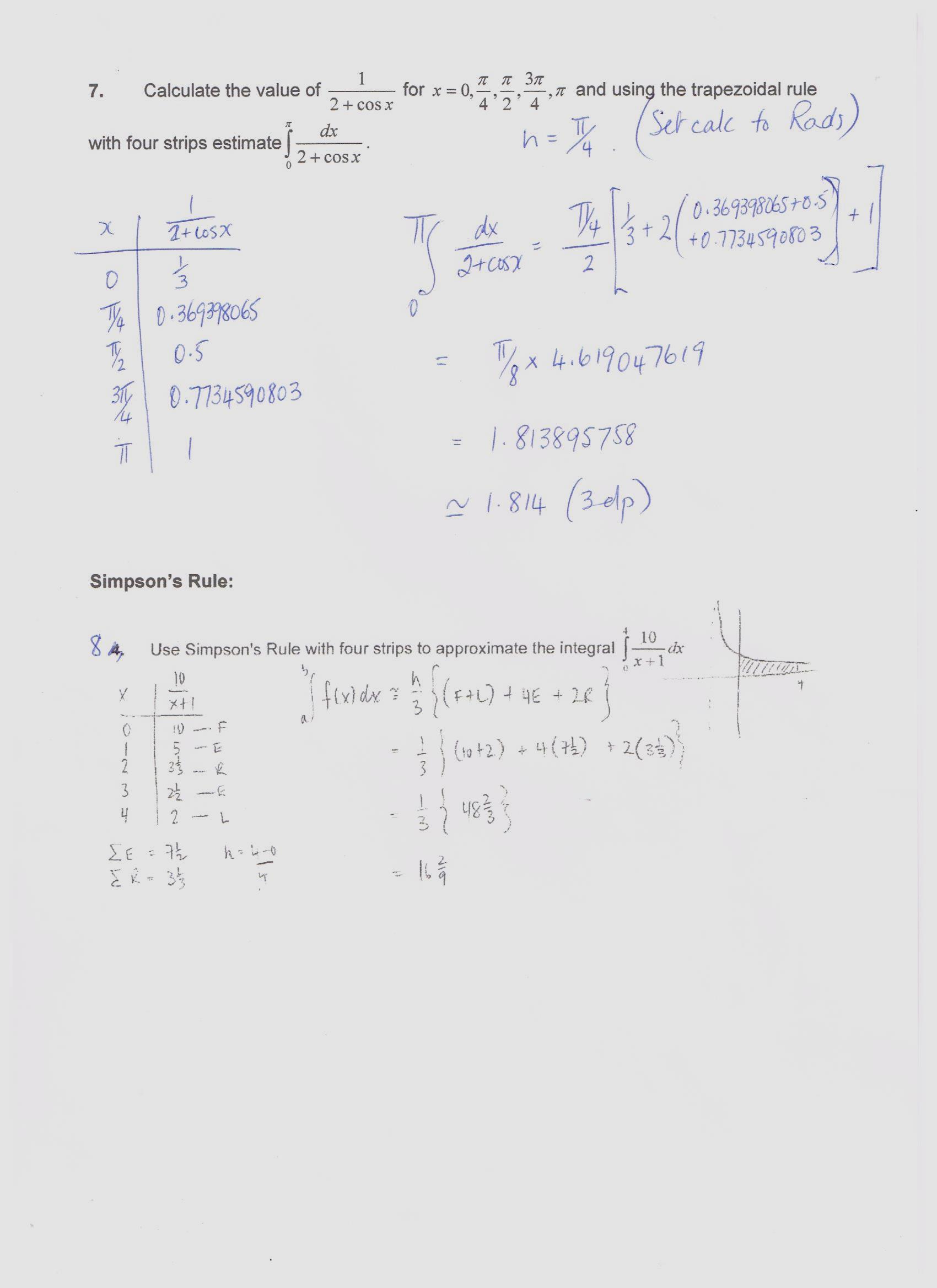
then *f’(x)* = *g(x)* =x

 **=** -

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