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November 21, 2017
Lab 4

Exercise One

```
>> answer_squared = integral2(@(r, t) exp(-(r).^2).*r, 0, 100, 0, 2.*pi);
>> sqrt(answer_squared)

ans =

    1.7725

>> sqrt(pi)

ans =

    1.7725
```

Exercise one

Exercise Two

```
>> integral2(@(u,v) (1-(tan(u).^(2).*tan(v).^(2))./(1-((sin(u)./cos(v)).^(2).*(sin(v)./cos(u)).^(2))), 0, pi./2, 0, @(u)(pi./2)-u)

ans =

    1.2337

>> (pi^2)/8

ans =

    1.2337
```

Exercise two

Exercise Three

Exercise Four

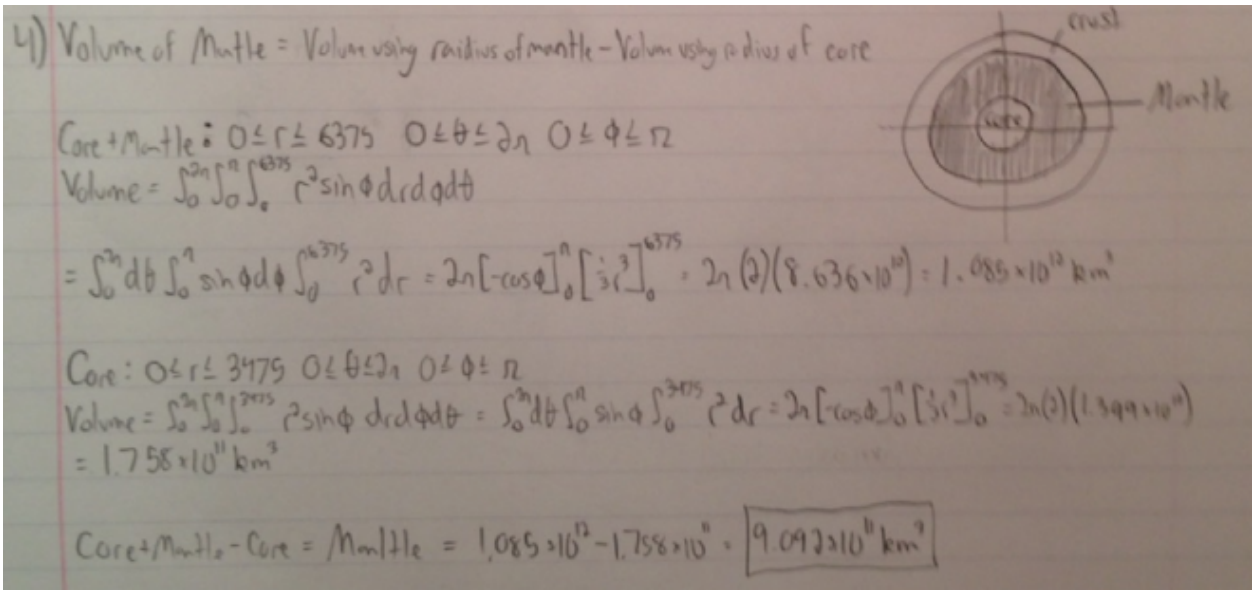

Figure 1: Hand calculation for exercise four

```
>> integral3(@(u,v,w) u.^(2).*(sin(v)), 3475, 6375, 0, pi, 0, 2.*pi)

ans =

   9.0948e+11
```

Figure 2: Matlab calculation for exercise four

Exercise Five

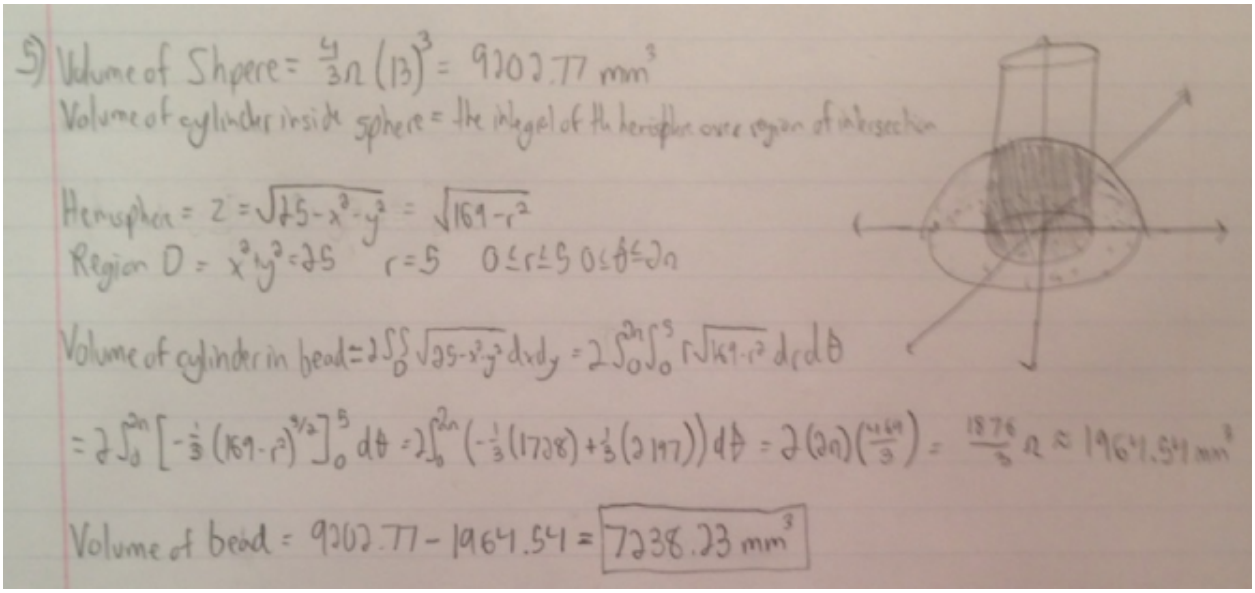

Figure 3: Hand calculation for exercise five

```
>> integral2(@(r,t) sqrt(13^(2)-r.^(2))-(-sqrt(13^(2)-r.^(2))), 5, 13, 0, 2*pi)

ans =

  871.7598
```

Figure 4: Matlab calculation for exercise five