

Week 9: Homework Solutions

3.

```
def simpsons_rule(f, N, a, b):
    approximation = 0
    for i in range(N):
        approximation += (b-a)/(6*N) * (f(a + (i)*(b-a)/N) +
                                         4*f(a + (i+1/2)*(b-a)/N) +
                                         f(a + (i+1)*(b-a)/N))

    return approximation
```

Simpson's rule gives the exact answer for the integral, no matter how many vertical strips are used for both x^2 and x^3 .