Math 2414 **Homework Set 1** **10 Points**

Integration by Parts

Evaluate each of the given integrals.

1. $\int_0^{-2} \left(8x - x^2\right) \mathbf{e}^{-2x}\, dx$

2. $\int \mathbf{e}^{-t} \cos\left(\frac{t}{3}\right) dt$

3. $\int 3\sin^{-1}\left(4z\right) dz$

4. $\int_0^{\frac{\pi}{2}} 6t \sin\left(2t\right)\cos\left(2t\right) dt$ Hint : A certain trig formula might be useful here….

5. $\int y^{11} \cos\left(1 - 2y^6\right) dy$

Integrals Involving Trig Functions

For problems 6 – 8 evaluate the given integral.

6. $\int 3y\cos^5\left(y^2\right)\sin^6\left(y^2\right) dy$

7. $\int \sin^4\left(2x\right) dx$

8. $\int \tan^2\left(8z\right)\sec^8\left(8z\right) dz$ Note : $\left(a+b\right)^3 = a^3 + 3a^2b + 3ab^2 + b^3$

For problems 9 & 10 evaluate the given integral. Note that even though I didn't do any problems like these in class you DO have the knowledge to do them.

9. $\int \frac{3\sin\left(x\right) + \sec^4\left(x\right)}{\tan\left(x\right)} dx$

10. $\int \cot^3\left(\frac{1}{4}t\right)\csc^5\left(\frac{1}{4}t\right) dt$