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# Mathematics Review Course
# Summer 2023
# Problem Set 04

August 10th, 2023

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**Note:** [Source] at the start of each problem denotes the source of the question. If there is no source, it is an original problem of my creation.

## Integration

1. [Paul Dawkins] $\int z^7 - 48x^{11} - 5x^{16} dz$

2. [Paul Dawkins] $\int \sqrt{x^7} - 7x^{5/6} + 17x^{10/3} dx$

3. [Paul Dawkins] $\int \frac{4}{x^2} + 2 - \frac{1}{8x^3} dx$

4. [Paul Dawkins] $\int (t^2 - 1)(4 + 3t) dt$

5. [Paul Dawkins] $\int t^3 - \frac{e^{-t} - 4}{e^{-t}} dt$

## Integration by Substitution

6. [Paul Dawkins] $\int (3 - 4w)(4w^2 - 6w + 7)^{10} dw$

7. [Paul Dawkins] $\int 5(z - 4)(z^2 - 8z)^{1/3} dz$

8. [Paul Dawkins] $\int \frac{4w + 3}{4w^2 + 6w - 1} dw$

9. [Paul Dawkins] $\int (7y - 2y^3)e^{y^4 - 7y^2} dy$

10. [Paul Dawkins] $\int \frac{3x}{(1 + 9x^2)^4} dx$

## Integration by Parts

11. $\int \frac{ln(x)}{x^2} dx$

12. [UC Davis] $\int \frac{ln(x)}{x^5} dx$