(C1-8.1) Name:

Homework Questions 1 – Basic Integration

Find an expression for y when $\frac{dy}{dx}$ is:

1. $\frac{dy}{dx} = x^2$

2. $\frac{dy}{dx} = x^3$

3. $\frac{dy}{dx} = 2x^2$

4. $\frac{dy}{dx} = 3x^4$

5. $\frac{dy}{dx} = -2x^5$

6. $\frac{dy}{dx} = -4x^2$

7. $\frac{dy}{dx} = 2x^{-3}$

8. $\frac{dy}{dx} = -3x^{-2}$

9. $\frac{dy}{dx} = 3 \cdot 6x^{0 \cdot 2}$

10. $\frac{dy}{dx} = -2 \cdot 4x^{-.2 \cdot 2}$

11. $\frac{dy}{dx} = x^{\frac{1}{2}}$

12. $\frac{dy}{dx} = -2x^{-\frac{1}{2}}$

13. $\frac{dy}{dx} = -5x^{-2}$

14. $\frac{dy}{dx} = 3x^{-\frac{2}{3}}$

15. $\frac{dy}{dx} = -4x^{-\frac{1}{4}}$

16. $\frac{dy}{dx} = -x^{\frac{3}{4}}$

17. $\frac{dy}{dx} = 4$

18. $\frac{dy}{dx} = -6x$

19. $\frac{dy}{dx} = 5x^{4}$

20. $\frac{dy}{dx} = -6x^{-3}$

(C1-8.2) Name:

Homework Questions 2 – Integration

Find either y or f'(x) when given... (Simplify your answers if possible)

1. $\frac{dy}{dx} = 3x^4 + 2x^2$

2. $f'(x) = 6x^5 - 3x^4$

3. $\frac{dy}{dx} = 2x^4 - 3x^2 + x + 2$

4. $\frac{dy}{dx} = 4x^3 - 2x^{\frac{1}{2}} + 3$

5. $\frac{dy}{dx} = 10x - 4x^3 + 2x^{-3}$

6. $f'(x) = 7x^2 + 5x + 4$

7. $f'(x) = -3x^{-4} - 2x^{-3} + 6$

8. $\frac{dy}{dx} = x^{\frac{1}{2}} + x^{\frac{1}{3}} - x^{\frac{1}{4}}$

9. $\frac{dy}{dx} = x^{-\frac{2}{3}} + 2x^{\frac{1}{2}} - 3x$

10. $f'(x) = 6 - 5x^{\frac{2}{3}} - 4x^{\frac{3}{4}}$

(C1-8.3) Name:

Homework Questions 3 – Integration using the Integral Sign

Integrate the following

1. $\int 3x^2 + 2x - 5 \; dx$

2. $\int 5x^2 - 3x + 6 \; dx$

3. $\int 2x^2 + 5x - 3 \; dx$

4. $\int 4x^{-2} + 3x^{-3}$

5. $\int 2x^{-\frac{2}{3}} + 3x^{-\frac{3}{4}} \; dx$

6. $\int 7x^{-5} + 5x^{-3} + 4 \; dx$

7. $\int x^3 + x^2 + x + 1 \; dx$

8. $\int 5x^{-3} + 2x^{-2} + x \; dx$

9. $\int 9x^5 + 8x^4 + 7x^3 + 3 \; dx$

10. $\int 6x + 4 \; dx$

(C1-8.4) Name:

Homework Questions 4 – Separate Integration

Integrate the following

1. $\int \frac{2}{x^2} - 3x \; dx$

2. $\int \sqrt{x} + \frac{3}{x^2} \; dx$

3. $\int x(x - 4) \; dx$

4. $\int (x + 2)^2 \; dx$

5. $\int (x - 4)(x + 2) \; dx$

6. $\int \frac{x^3 - 3x}{4x} \; dx$

7. $\int \frac{2}{\sqrt[3]{x}} + \frac{1}{\sqrt{x^3}} + 1 \; dx$

8. $\int \sqrt[3]{x} + 3\sqrt{x} \; dx$

9. $\int \frac{\sqrt{x} + 2x^4}{x^2} \; dx$

10. $\int (\sqrt{x} + 3)^2 \; dx$

(C1-8.5) Name:

Homework Questions 5 – Integrating a derived function

Find the equation of the curve when you are given the derived function and a given point

1. $\int 4 - 3x \ dx$ at (-2,4)

2. $\int 6x^2 - 5x - 25 \ dx$ at (-2,0)

3. $\int 12x^2 + x + 1 \ dx$ at (2, 24)

4. $\int 2x + 1 \ dx$ at (1,1)

5. $\int x^2 + 2x - 15 \ dx$ at (3,-5)

6. $\int -6x^2 + 4x + 2 \ dx$ at (0,0)

7. $\int 3x^2 - 12x + 12 \ dx$ at (0,3)

8. $\int 2x \ dx$ at (2,1)

9. $\int 3 - 4x \ dx$ at (-2,1)

10. $\int 6x^2 - 4x - 1 \ dx$ at (-1,-1)