

3) Find the integrals. Simplify wherever possible. (50 points total)

a) $\int_1^5 (x^3 - 7x^{-2}) dx$ (8 points)

You may write your final answer as a decimal.

b) $\int_0^5 8e^{2x} dx$ (7 points)

c) $\int x^2(x^3 + 9)^7 dx$ (9 points)

d) $\int \frac{5x+2}{5x^2+4x} dx$

(8 points)

e) $\int \frac{e^{\sqrt{x}}}{\sqrt{x}} dx$

(8 points)

f) $\int_2^5 \frac{dx}{3-4x}$

(10 points)

4) Find the average value of $f(x) = 5x^2$ on the interval $[1,4]$. (10 points)

5) Find the area bounded by the graphs of $y = x^2 + 2$ and $y = 5 - 2x$. (16 points)

YOU MAY CONTINUE ON THE NEXT PAGE.

6) Find the domain of $f(x,y) = \frac{\sqrt{x}}{y}$. (3 points)

7) Let $f(x,y) = \ln(3x + y^3) + xy^2$. (15 points total)

a) Find $f_x(x,y)$.

b) Find $f_y(x,y)$.

c) Find $f_y(1,2)$.

8) Let $f(x,y,z) = yz^4 - xe^y$. (9 points total)

a) Find $f(-2,3,1)$.

b) Find $f_y(x,y,z)$.

c) Find $f_{yz}(x,y,z)$.