

Exercise Set 5, Due July 23rd, 10 points each

Find $\frac{dy}{dx}$ in the following equations

(1) $x + y = x^2$

(2) $xy = x - 2y$

(3) $\sqrt{y} = e^x - e^y$

Consider the function $f(x) = x^4 - 2x^2 + 3$

(4) Find the x -coordinates of when $f'(x) = 0$

(5) Find the absolute minimum and maximum in the interval $[-2, 3]$

Consider the function $f(x) = \ln(x^2 + x + 1)$

(6) Find the x -coordinates of when $f'(x) = 0$

(7) Find the absolute minimum and maximum in the interval $[-1, 1]$

Find the following integrals using geometric reasoning:

(8) $\int_{-3}^3 1 + \frac{x}{2} dx$

(9) $\int_2^7 5 - x dx$

(10) $\int_{-1}^0 2 - \sqrt{1 - x^2} dx$