

## CALCULUS I – Worksheet #38

---

1. Find all critical points and points of inflection, and sketch the curve.

(A)  $f(x) = x^4 + 4x^3 + 5$

(B)  $f(x) = x^4 - 2x^2$

---

2. The difference of two numbers is 50. Find the two numbers so that their product is as small as possible.

---

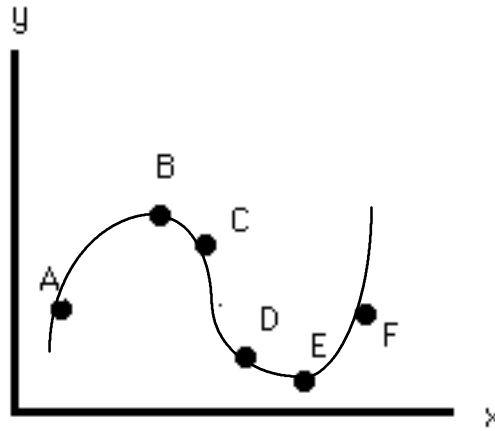
3. Find two numbers whose sum is 36 and whose product is as large as possible.

---

4. A farmer has 100 feet of fence and wishes to enclose a rectangular plot of land. The land borders a river so no fence is required on that side. What should the dimensions of the rectangle be in order that it include the largest possible area?

---

5. Which point on the graph is  $y' < 0$  and  $y'' < 0$  ?



---

6. If  $y = x^2 - 4x + 3$  where  $x$  can only be the numbers such that  $0 \leq x \leq 5$ , then what is the largest value that  $y$  will be?

---

7. Give the **integral** for finding the volume when the area between  $y = e^{x^2}$  and  $y = x$  from  $x = 0$  to  $x = 2$  is revolved around the  $y$ -axis.

---