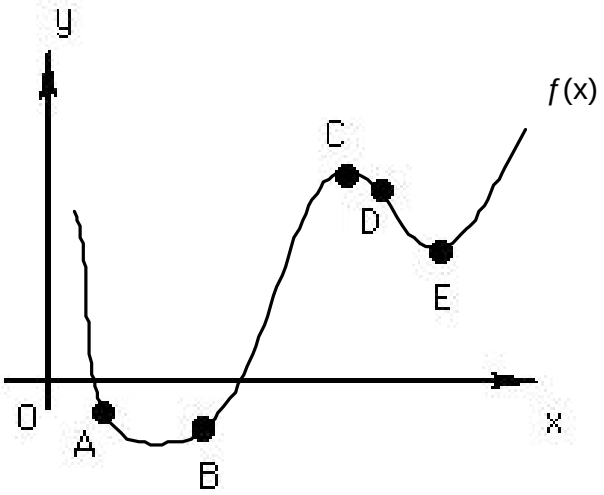
**CALCULUS I – Worksheet #42**

1. Find all inflection points for $f(x) = 2x^3 + 6x^2 - 6x + 7$.

2. Find the maximum value of $y = -x^2 + 4x + 25$ on $[-2,3]$. (Find the y number at the absolute maximum point)

3. Find the absolute minimum value (the y number) of $f(x) = x^3 - 6x^2$ on $[1,2]$.

4. Which point on the graph of f(x) is $f'(x) < 0$ and $f''(x) > 0$?




5. The curve of $y = \dfrac{1-x}{x-3}$ is concave down on what interval?

6. Find all critical points for $f(x) = 3x^4 + x^3$.

7. On what intervals is $f(x) = 2x^3 + 3x^2$ increasing?

8. A couple have enough wire to construct 160 ft of fence. They wish to use it to form three sides of a rectangular garden, one side of which is along a building. Find the dimensions that will yield the largest area.

9. Which point on the graph of f(x) from problem #4 is $f'(x) = 0$ and $f''(x) > 0$?

10. Which point on the graph of f(x) from problem #4 is $f'(x) > 0$ and $f''(x) > 0$?

11. If the first derivative of f is negative for $x = 9$, which of the following statements must be true?

I. f(9) is negative
II. f has a minimum at $x = 9$
III. f is decreasing at $x = 9$

(A) I only (B) II only (C) III only (D) I & II (E) I & III

12. Find all vertical and horizontal asymptotes, x- and y-intercepts, holes, and sketch $y = \frac{x^2 - 3x + 2}{x^2 - 4x + 3}$ .

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13. Find F ' (x) if $F(x) = \int_4^{x^2} 3\sin t^2 \, dt$

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14. Find the volume of the solid if the area bounded by $y = 3x - x^2$ and $y = x$ is revolved around the y-axis.

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15. The base of a solid in the xy-plane is the circle $x^2 + y^2 = 16$. Cross sections of a solid perpendicular to the y=axis are squares. The volume of the solid is

A) $\frac{16\delta}{3}$ B) $1024\delta$ C) $\frac{16}{3}$ D) $\frac{1024}{3}$ E) $\frac{1024\delta}{3}$

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