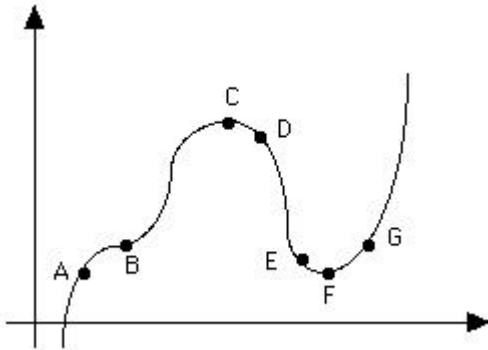


CALCULUS I – Worksheet #44

1. Find the absolute minimum point(s) of $f(x) = 2x^3 - 6x^2 + 1$ on the interval $[-2, 3]$.
 2. Find all critical points for $f(x) = 2x^4 - 4x^2$ and label the type that they are.
 3. Find all values of x for which the graph of $f(x) = x^4 - 2x^3 - 12x^2 + 12x + 12$ is concave down.
 4. Find the total number of relative maximums of the function whose derivative is given by $f'(x) = x(x - 2)^3(x + 6)^5$.
 5. Find all points of inflection for $f(x) = x^4 - 24x^2$.
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6. At which point on the following graph is $f'(x) > 0$ and $f''(x) > 0$?



7. A square piece of cardboard has 12 inches in a side. An open box is formed by cutting out equal square pieces at the corners and bending upward the projecting portions that remain. Find the maximum volume that can be obtained.
 8. Find all values of x for which the graph of $f(x) = x^4 - 8x^3 + 14$ is increasing.
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9. If $F(x) = \int_{-2}^{2x} \ln(\cos t^3) dt$, then find $F'(x)$.
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10. Find the vertical and horizontal asymptotes, x - and y -intercepts, holes, and sketch: $y = \frac{x^2 - 3x + 2}{x^3 - 4x^2 + 3x}$.
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11. Find the volume of the solid when the area bounded by $y = x^2$ and $y = \sqrt{x}$ is revolved around the y -axis (use a shell).
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12. A farmer builds a fence like the one below where the dotted line is a river and requires no fence. If the farmer has 1200 feet of fence, what dimensions would enclose the greatest area?



13. $\sum_{k=2}^7 (3k - 1) =$

14. Find ${}_{12}C_{10}$ and ${}_{12}P_{10}$.

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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) $\frac{16\pi}{3}$ B) 1024π C) $\frac{16}{3}$ D) $\frac{1024}{3}$ E) $\frac{1024\pi}{3}$
