$f(x) = 11x^5 + 10x^4 + 9x^3 + 8x^2 + 7x + 6$

$g(x) = \cos(x^3)$

$h(x) = \int_1^2 x^{\cos x}\, dx$

$x(t) = t^2 + e^t$

$A = f^{6}(3)$

$B = g'(\sqrt{\pi})$

$C = h(1)$

$D = x'(0)$

Find $A + B + C + D$

$A = \lim_{z \to 5} \left(\frac{1}{z} - \frac{1}{5}\right)\left(\frac{1}{z-5}\right)$

$B = \lim_{y \to 0} \frac{1 - \sec^2 2y}{y^2}$

$C = \lim_{h \to 0} \frac{\cos(\pi + h) + 1}{h}$

$D = \lim_{x \to 0} \frac{\sin 5x}{2x}$

Find $A * B * C * D$

$s(x) = \frac{1}{2x}$

$t(x) = (x-6)^3 - 3(x-6) + 2$

$u(x) = x^4 - 4x^3 + 1$

$v(x) = -3\ln(x^2)$

A = The intervals where $s(x)$ is decreasing

B = The intervals where $t(x)$ is increasing

C = The intervals where $u(x)$ is concave down

D = The intervals where $v(x)$ is concave up

Find $A \cup B \cup C \cup D$

A = The number of points of inflection of $\cos(2x)$ on $[0, 4\pi]$

B = The average value of $\dfrac{4x^4 + 8x^2 + 12}{\sin x}$ on $(-\infty, \infty)$

C = The number of values of c on $[0, 2\pi]$ that satisfy the Mean Value Theorem for derivatives for $f(x) = \cos x$.

Find: $A^B + C$.

Let C be the curve in R^3 defined by $x = t^2,\, y = 4t^{\frac{3}{2}},\, z = 9t$, for $t \geq 0$. Calculate the distance along C from $(1, 4, 9)$ to $(16, 32, 36)$.

Find the area of the ellipse $(x - \sqrt{3})^2 + \dfrac{81(y - \pi)^2}{100} = 81$.

If the function $f(x)$ is continuous and differentiable for all x and $f'(2) = 3$, $f''(x) = 0$ and $f(3) = 12$, find the equation for the function $f(x)$.

$$\int_0^A 2t\, dt = 16$$

$$\int_4^{3A} \frac{dv}{2} = 9$$

$$\int_C^B \left(\frac{12}{\pi}\tan^2 x\right) dx = 12 \quad C \in [0, 4]$$

Find: $|A * B * C|$

$$f(x) = \frac{x^2}{(x-1)} \qquad g(x) = x \sin^2 x \qquad h(x) = xe^x + 2^x$$

Find: $f'(2) + g''(\pi) + h''(1)$.

Given $v(x) = g(h(x)) \qquad u(x) = h(g(x)) \qquad s(x) = \int_{u(x)}^{v(x)} f(t)\,dt$

$h(-3) = -3 \qquad h(1) = -2 \qquad h'(-3) = 1 \qquad h'(1) = 6$

$g(-3) = 1 \qquad g(-2) = -3 \qquad g'(1) = -3 \qquad g'(-2) = \frac{1}{3} \qquad g'(1) = 1$

$f(-3) = \frac{1}{3} \qquad f(-2) = \frac{1}{3} \qquad f(1) = \frac{1}{2} \qquad f'(-3) = 3 \qquad f'(-2) = 2 \qquad f'(1) = 2$

Find: $s'(1)$.

Find all asymptotes of $R(x) = \dfrac{x^2 + 2x - 15}{x^2 - 5x + 6}$.

The base of a solid is the region between the parabolas $x = y^2$ and $x = 3 - 2y^2$. Find the volume of the solid given that the cross sections perpendicular to the x-axis are rectangles of height 2.