

Hello. Please write **DNE** in a blank if the described object does not exist or if the indicated operation cannot be performed.

F1: Show no work.

a Blanks $\in \mathbb{R}$. So $\frac{1}{2+3i} = \underline{\hspace{2cm}} + i \cdot \left[\underline{\hspace{2cm}} \right]$.

And $\frac{7-2i}{2+3i} = \underline{\hspace{2cm}} + i \cdot \left[\underline{\hspace{2cm}} \right]$.

By the way, $|5-3i| = \underline{\hspace{2cm}}$.

b Let $h := [y \mapsto \cos(2y)]$. Then the 5-topped poly $\mathbf{T}_{5,0}^h(x) = \underline{\hspace{2cm}}$.

c Writing poly $p(x) := 9 + 29x^2 + 49x^3 + 5x^4$ as $\sum_{k=0}^4 C_k \cdot [x+3]^k$, coeff C_3 is in: Circle one interval
 $(-\infty, -70)$, $[-70, -15)$, $[-15, -8)$, $[-8, -1)$, $[-1, 8)$,
 $[8, 15)$, $[15, 30)$, $[30, 75)$, $[75, 94)$, $[94, +\infty)$.

d Poly $\beta(x) := x^9 + x^{87}$ has 9th derivative, $\beta^{(9)}(x) = \underline{\hspace{2cm}}$ (Coeffs ITO of prods and quotients of factorials.)

Our integral-formula of the 9th Remainder-term, centered at 2, evaluated at 5, is

$\mathbf{R}_{9,2}^\beta(5) = \int_{\underline{\hspace{1cm}}}^{\underline{\hspace{1cm}}} \underline{\hspace{2cm}} \cdot dt.$

e Interval $J := [3, 7]$ has ptn Q with cutpoints $\{3, 5, 7\}$. Define $h := [x \mapsto x \cdot \mathbf{1}_{[3,5)}(x)]$. Then

$\text{Osc}^h(Q) = \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$.

Equipping Q with sample points $\{4, 5\}$, now $\mathbf{RS}^h(Q) = \underline{\hspace{2cm}}$.

f On the circle $x^2 + y^2 = 1^2$, the max-point of $\Gamma(x, y) := x - 2y$ is $(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$.

End of Class-F

F1: 120pts

Poorly stapled, or missing ordinal : -5pts

Missing name, or honor sig : -5pts

Total: 120pts

Please PRINT your *name* and *ordinal*. Ta:

Ord:

HONOR CODE: "I have neither requested nor received help on this exam other than from my professor."

Signature: