Vu Buddy- MTH301

1. **[math-block] I = \int\limits_C {f(x,y)dx = } \int\limits_C {f(x,y)\frac{{ds}}{{dx}}dx,\,\, {\text{where}}\,\,\frac{{ds}}{{dx}} = _________.} [/math-block]**

    a. [math-block] \sqrt {1 + {{\left({\frac{{dy}}{{dx}}} \right)}^2}} [/math-block]

    b. [math-block] \sqrt {1 + \frac{{dy}}{{dx}}} [/math-block]

    c. [math-block] \sqrt {{{\left({\frac{{dy}}{{dx}}} \right)}^2}} [/math-block]

    d. [math-block] \sqrt {1 - {{\left({\frac{{dy}}{{dx}}} \right)}^2}} [/math-block]

2. **[math-block] \eqalign{ & {\text{Wallis sine formula when n is even}} \cr & \int\limits_0^{\frac{\pi }{2}} {Si{n^n}x} dx = \cr} [/math-block]**

    a. [math-block] \frac{{n - 1}}{2} \cdot \frac{{n - 1}}{2} \cdot \frac{{n - 1}}{2} \cdot \frac{{n - 1}}{2} \cdot \cdot \cdot \frac{5}{6} \cdot \frac{3}{4} \cdot \frac{1}{2} \cdot \frac{\pi }{2} [/math-block]

    b. [math-block] \frac{n}{2} \cdot \frac{{n - 2}}{2} \cdot \frac{{n - 4}}{2} \cdot \frac{{n - 6}}{2} \cdot \cdot \cdot \frac{6}{7} \cdot \frac{4}{5} \cdot \frac{2}{3} [/math-block]

    c. [math-block] \frac{{n - 1}}{n} \cdot \frac{{n - 3}}{{n - 2}} \cdot \frac{{n - 5}}{{n - 4}} \cdot \frac{{n - 7}}{{n - 6}} \cdot \cdot \cdot \frac{5}{6} \cdot \frac{3}{4} \cdot \frac{1}{2} \cdot \frac{\pi }{2} [/math-block]

    d. [math-block] \frac{{n - 1}}{n} \cdot \frac{{n - 3}}{{n - 2}} \cdot \frac{{n - 5}}{{n - 4}} \cdot \frac{{n - 7}}{{n - 6}} \cdot \cdot \cdot \frac{6}{7} \cdot \frac{4}{5} \cdot \frac{2}{3} [/math-block]

3. **The path traversal in calculating the Green’s Theorem is --------**

    a. outwards

    b. anticlockwise

    c. clockwise

    d. inwards

4. **[math-block] {\text{The}}\,\,{\text{grad}}\,\,{\text{operator}}\,\,\nabla \,\,{\text{acts}}\,\,{\text{on}}\,\,{\text{a(an)}}\,\,{\text{_________}}\,\,{\text{and}}\,\,{\text{gives}}\,\,{\text{a}}\,\,{\text{vector}}{\text{.}} [/math-block]**

    a. [math-block] {\text{vector}} [/math-block]

    b. [math-block] {\text{constant}} [/math-block]

    c. [math-block] {\text{unit}}\,\,{\text{vector}} [/math-block]

    d. [math-block] {\text{scalar}} [/math-block]

5. **The line integral [math] \int\limits_C {V(r)dr} [/math] representing the area of the --------- surface between the end points of the curve.**

    a. plane

    b. none of these

    c. curved

    d. smooth

6. **[math-block] \eqalign{ & {\text{Wallis sine formula when n is even}} \cr & \int\limits_0^{\frac{\pi }{2}} {Si{n^4}x} dx = \cr} [/math-block]**

    a. [math-block] \frac{3}{4} \cdot \frac{1}{2} [/math-block]

    b. [math-block] \frac{3}{4} \cdot \frac{1}{2} \cdot \frac{\pi }{2} [/math-block]

    c. [math-block] \frac{4}{3} \cdot \frac{2}{1} \cdot \frac{\pi }{2} [/math-block]

    d. [math-block] \frac{4}{5} \cdot \frac{2}{3} [/math-block]

7. **Line integral is used to calculate --------**

    a. area

    b. force

    c. volume

    d. length

8. **[math-block] \begin{gathered} {\text{For}}\,\,{\text{line}}\,\,{\text{integral}}\,\, {\text{with}}\,\,{\text{respect}}\,\,{\text{to}}\,\,{\text{arc}}\,\,{\text{length,}}\,\,\, {\text{when}}\,\,x\,\,{\text{and}}\,\,y\,\,{\text{are}}\,\,{\text{expressed}}\,\,{\text{in}}\,\, {\text{parametric}}\,\,{\text{form,}}\,\, \hfill \\\ I = \int\limits_C {f(x,y)ds = \int\limits_{{t_1}}^{{t_2}} {f(x,y)ds} } {\text{,}}\,\,{\text{where}}\,\,ds = {\text{_______}} {\text{.}} \hfill \\\\ \end{gathered} [/math-block]**

    a. [math-block] \sqrt {{{\left({\frac{{dx}}{{dt}}} \right)}^2} + {{\left({\frac{{dy}}{{dt}}} \right)}^2}} \,\,dt [/math-block]
    b. [math-block] \sqrt {1 + {{\left({\frac{{dy}}{{dx}}} \right)}^2}} [/math-block]
    c. [math-block] \sqrt {{{\left({\frac{{dx}}{{dt}}} \right)}^2} + {{\left({\frac{{dy}}{{dt}}} \right)}^2}} [/math-block]
    d. [math-block] \sqrt {{{\left({\frac{{dx}}{{dt}}} \right)}^2} - {{\left({\frac{{dy}}{{dt}}} \right)}^2}} \,\,dt [/math-block]

9. **[math-block] \int\limits_0^{\frac{\pi }{2}} {Co{s^2}x} dx = \frac{1}{2}\left| {\frac{\pi }{2} + \frac{{\sin \pi }}{2}} \right| = [/math-block]**

    a. [math-block] \frac{\pi }{3} [/math-block]
    b. [math-block] \frac{\pi }{2} [/math-block]
    c. [math-block] \frac{{3\pi }}{4} [/math-block]
    d. [math-block] \frac{\pi }{4} [/math-block]

10. **[math-block] {\text{If}}\,\,Pdx + Qdy + Rdw\,\,{\text{is}}\,\,{\text{an}}\,\,{\text{exact}}\,\, {\text{differential}}\,\,{\text{equation}}\,\,{\text{then}}\,\,\oint\limits_C {\left({Pdx + Qdy + Rdw} \right)} \,\,{\text{is}}\,\,{\text{_________}}{\text{.}}\,\, [/math-block]**

    a. [math-block] - 1 [/math-block]
    b. [math-block] {\text{infinite}} [/math-block]
    c. [math-block] {\text{zero}} [/math-block]
    d. [math-block] {\text{finite}} [/math-block]