EMCF 33

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1. Compute $\int_0^{\pi/2} \cos(2x)\,dx$

   a. 3/4
   b. 5/4
   c. 4/3
   d. 1
   e. 0
   f. None of these.

2. Compute $\int_0^2 \frac{x}{\sqrt{2x^2+1}}\,dx$

   a. 2
   b. 1
   c. 4
   d. 3
   e. 5/2
   f. None of these.

3. Compute $\int_{-\pi}^{\pi/2} \sin(2x)\,dx$.

   a. 1
   b. 0
   c. $1/2$
   d. 2
   e. None of these.

4. Compute $\int_0^1 x\sqrt{3x^2+1}\,dx$.

   a. $5/7$
   b. $2/3$
   c. $7/9$
   d. $3/4$
   e. None of these.

5. Give the area bounded between the graphs of $f(x) = x^2 + 1$ and $g(x) = 2x + 4$.
    a. $31/3$
    b. $34/3$
    c. $29/3$
    d. 10
    e. None of these.
6. Give the area bounded between the graphs of $f(x) = x^2 + 2x - 1$ and $g(x) = 2x$.
    a. $4/3$
    b. 1
    c. $7/6$
    d. $3/2$
    e. None of these.
7. Give the area bounded between the *x*-axis and the graph of $f(x) = x^2 + 2x - 3$ over the interval [-2,2].
    a. $31/3$
    b. $34/3$
    c. $29/3$
    d. 10
    e. None of these.
8. Give the area bounded between the *x*-axis and the graph of $f(x) = x^2 - x$ over the interval [-1,1].
    a. $7/6$
    b. $4/3$
    c. $2/3$
    d. 1
    e. None of these.
9. Compute $\int_0^{\pi/6} \cos(x)\sin(\pi\sin(x))\,dx$
    a. $1/(2\pi)$
    b. 0
    c. $2/\pi$
    d. $1/\pi$
    e. None of these.

10. Suppose $F(x)$ is the antiderivative for the function $x\sqrt{x^2+3}$ that satisfies $F(1) = -2$. Give $3\left(F\left(0\right)-\sqrt{3}\right)+1$.

    a. -11
    b. -12
    c. -13
    d. -14
    e. None of these.