FORM: A

NAME:	
ID: sec: 5 , 16	

① The area of the surface obtained by rotating the curve $y = x^5$, $1 \le x \le 32$ about the x-axis is given by

(a) $\int_1^{32} 2\pi x^5 \sqrt{1+25x^8}\, dx$

(b) $\int_1^{32} 2\pi x^5 \sqrt{1+5x^4}\, dx$

(c) $\int_1^{2} 2\pi y \sqrt{1+25x^8}\, dy$

(d) $\int_1^{2} 2\pi \sqrt[5]{y} \sqrt{1+\frac{1}{25}y^{-8/5}}\, dy$

(e) $\int_1^{32} 2\pi x \sqrt{1+25x^8}\, dx$

② If $F(x) = \int_x^0 \sqrt{1+t^3}\, dt$ then $F'(1) =$

(a) $\sqrt{2}$

(b) $\sqrt{3}$

(c) $1-\sqrt{2}$

(d) $-\sqrt{2}$

(e) 0

③ The interval of convergence of the power series $\sum_{n=1}^{\infty} \frac{(2x+1)^n}{n}$ is

(a) $(-\frac{3}{2}, \frac{1}{2}]$

(b) $[-1, 0)$

(c) $[-\frac{3}{2}, \frac{1}{2})$

(d) $(-1, 0]$

(e) $[-\frac{3}{2}, \frac{1}{2}]$

④ The improper integral $\int_1^{\infty} \frac{x\,dx}{e^{px}}$ is convergent if

(a) diverges for all p

(b) $p < 0$

(c) $p > -3$

(d) $p < -3$

(e) $p > 0$

(5) The series $\sum_{n=1}^{\infty} \frac{\sin^2 n}{\pi n + n\sqrt{n}}$

(a) diverges by integral test

(b) is a convergent geometric

(c) Converges by the Comparison test

(d) is a convergent p-series

(e) diverges by the test for divergence

(6) The Taylor series of $f(x) = \frac{1}{x+2}$ about $x = -1$ is

(a) $\sum_{n=0}^{\infty} (-1)^n (x+1)^n$

(b) $\sum_{n=0}^{\infty} (-1)^n (x+2)^n$

(c) $\sum_{n=0}^{\infty} (-1)^n \cdot n! \, (x+1)^n$

(d) $\sum_{n=0}^{\infty} \frac{(-1)^n}{n!} (x+1)^n$

(e) $\sum_{n=0}^{\infty} \frac{(-1)^n}{n!} (x+2)^n$

(7) The volume generated by rotating the region bounded by the given curves

$y = \frac{1}{x}$, $y = 0$, $x = 1$, $x = 4$

about the y-axis

(a) 7π

(b) 6π

(c) 5π

(d) 4π

(e) 3π

(8) $\int_{-2}^{2} |1 - x^2| \, dx =$

(a) 1 (b) 2 (c) 3 (d) 4 (e) 5

(9) If R_n is the Riemann sum for $f(x) = 2 - \frac{1}{3}x$, $1 \le x \le 4$ with n rectangles and taking smaple points to be the right endpoint then $R_n =$

(a) $5 - \frac{1}{n} + \frac{3n+1}{n^2}$

(b) $\frac{5}{5} - \frac{n+1}{n}$

(c) $5 - \frac{n+1}{2n}$

(d) $2 - \frac{n+1}{3n}$

(e) $5 - \frac{3n+3}{2n}$