

EMCF 40

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1. $\lim_{x \rightarrow 0} \frac{\cos 2x - 1 + 2x^2}{x^2} =$

- (a) -2
- (b) 1
- (c) -1
- (d) 0
- (e) None of the above.

2. $\lim_{x \rightarrow 0} (\cos 2x)^{1/x^2} =$

- (a) e^{-1}
- (b) e^{-2}
- (c) e^2
- (d) 1
- (e) None of the above.

3. $\int_2^{10} \frac{1}{(x-2)^{2/3}} dx =$

- (a) 6
- (b) does not exist
- (c) $2/3$
- (d) 3
- (e) None of the above.

4. $\int_0^{\infty} x \cos x^2 dx =$

- (a) 0
- (b) ∞
- (c) 1
- (d) does not exist
- (e) None of the above.

5. The sum of the series $\sum_{k=0}^{\infty} \frac{4}{3^{k+1}}$ is:

- (a) 2
- (b) 1/2
- (c) 3/4
- (d) 2/3
- (e) None of the above.

6. The series $\sum \frac{(-1)^k \sqrt{k+2}}{\sqrt{4k^3 + 2k + 1}}$ is:

- (a) absolutely convergent
- (b) conditionally convergent
- (c) divergent
- (d) cannot be determined
- (e) None of the above.

7. The series $\sum \frac{(-1)^k 2^k k!}{k^k}$ is:

- (a) absolutely convergent
- (b) conditionally convergent
- (c) divergent
- (d) cannot be determined
- (e) None of the above.

8. The interval of convergence of $\sum \frac{1}{k} 4^{k+2} x^k$ is:

- (a) $[-1/4, 1/4)$
- (b) $(-4, 4]$
- (c) $[-4, 4)$
- (d) $(-1/4, 1/4]$
- (e) None of the above.

9. The interval of convergence of $\sum \frac{(-1)^k 2^k}{k^2 + 1} x^k$ is:

- (a) $(-2, 2]$
- (b) $(-1/2, 1/2]$
- (c) $(-2, 2)$
- (d) $[-1/2, 1/2]$
- (e) None of the above.

10. The Taylor series centered at 0 for $f(x) = e^{2x}$ is:

- (a) $\sum_{k=0}^{\infty} \frac{(-1)^k 2^k}{k!} x^k$
- (b) $\sum_{k=0}^{\infty} \frac{2^k}{k!} x^k$
- (c) $\sum_{k=0}^{\infty} \frac{2}{k!} x^k$
- (d) $\sum_{k=0}^{\infty} \frac{2^{k-1}}{k!} x^k$
- (e) None of the above.