

BC Calculus
Test # 8 (1–128) Review Answers

116A. the sum of the terms of a sequence

$$B. S_1 = \frac{1}{3} \quad S_2 = \frac{4}{9} \quad S_3 = \frac{13}{27} \quad S_4 = \frac{40}{81} \quad S_5 = \frac{121}{243} \quad S_6 = \frac{364}{729}$$

C. appears to converge to $\frac{1}{2}$

117A. $\frac{21233}{999}$

B. Diverges; geometric, $r = 2$

C. Converges to $-\frac{2}{5}$; geometric

D. Converges to $\frac{1}{2}$; telescoping

E. Diverges; telescoping

118. You need to be able to graph these without using your calculator. After doing so, check them on your calculator.

A. Limacon with inner loop

B. Cardioid

C. Dimpled limaçon

D. Convex Limaçon

E. Lemniscate

119A. 1. Find $\frac{dy}{dx}$ in terms of t , the parameter.

2. Find the derivative, with respect to t , of $\frac{dy}{dx}$.

3. Divide by $\frac{dx}{dt}$.

B. $\frac{d^2y}{dx^2} = 6e^{4t} = 6y^2$

C. $y = -\sqrt{3}x + 2$; negative concavity

120.

121A. Diverges; divergence theorem

B. Diverges; divergence theorem

C. Converges to 4; geometric

122A. $-\frac{1}{4}x^2 \cos(4x) + \frac{1}{8}x \sin(4x) + \frac{1}{32}\cos(4x) + C$

B. $\frac{2}{13}e^{2x} \cos(3x) + \frac{3}{13}e^{2x} \sin(3x) + C$

C. $\frac{1}{2}\sec x \tan x + \ln \sqrt{\sec x + \tan x} + C$

123. $f'(t) = e^t(t+1) \mathbf{i} - 2e^{2t}(2t+1) \mathbf{j}$ $\{t \in \mathfrak{R}\}$

124A. $\frac{d^2y}{dx^2} = -\frac{1}{y^3}$ B.

125A. 1 B. 1 C. diverges

126.

- 127A. Diverges; harmonic B. Diverges; harmonic multiple
C. Diverges; harmonic multiple D. Converges; p-series with $p = 2$
E. Converges; p-series multiple with $p = 2$
F. Diverges; p-series with $p = \frac{1}{2}$

- 128A. Diverges by the comparison test; compare to $\sum \frac{4}{n}$, a divergent harmonic multiple
B. Converges by the comparison test; compare to $\sum \frac{4}{n^2}$, a convergent p-series multiple
C. Converges by the comparison test; compare to $\sum \frac{4}{2^n}$, a convergent geometric series
D. Converges by the integral test
E. Diverges by the integral test