1. For which values of r the function e^{rx} is a solution to the differential equation

$$y'' - y = 0$$

A) $r = \pm 1$ B) $r = 1$ C) $r = -1$ D) $r = \pm 2$ E) $r = \frac{1}{2}$

2. A bacteria culture grows with constant relative growth rate. The count was 400 after 2 hours and 25,600 after 6 hours. What was the initial population of the culture?

A) 64   B) 32   C) 25   D) 50   E) 100

3. Write the fourth degree Taylor polynomial for the function $f(x) = e^{-2x}$.

A) $1 - 2x + 2x^2 - \frac{4}{3}x3 + \frac{2}{3}x4$ B) $1 + 2x + 2x^2 = \frac{4}{3}x3 + \frac{2}{3}x4$ C) $1 - 2x + 2x^2 - \frac{4}{3}x3$

D) $1 - 2x + 2x^2$ E) $1 - 2x$

4. Find the Taylor polynomial of degree 5 for the function $f(x) = \sin x$.

A) $x - \frac{1}{6}x3$

B) $x - \frac{1}{6}x3 + \frac{1}{120}x5$

C) $x + \frac{1}{6}x3 + \frac{1}{120}x5$

D) $x + \frac{1}{6}x3$

E) $x + 75x4$

5. Calculate $\binom{6}{3}$.

A) 15   B) 120   C) 20   D) 10   E) 256

6. How many different committees consisting of 3 men and 2 women can be formed from 6 males and 5 females.

A) $\binom{6}{3}$ B) $\binom{5}{2}$ C) $\binom{6}{3} + \binom{5}{2}$ D) $\binom{6}{3}\binom{5}{2}$ E) 20

7. Suppose you toss an honest coin 5 times. What is the probability of getting exactly 2 heads?

A) $\binom{5}{2}(\frac{1}{2})^5$ B) $(\frac{1}{2})^5$ C) $\binom{5}{2}$ D) $\binom{5}{2} + (\frac{1}{2})^5$ E) $\binom{5}{2}(\frac{1}{3})^2(\frac{2}{3})^3$

8. Suppose that an initial amount of 1000 is invested at an annual rate of 6 percent. Find the amount that there will be at the end of one year if the interest is compounded quarterly.

A) $1000(1+\frac{0.06}{4})^4$ B) $1000(1+\frac{0.06}{12})^{12}$ C) $1000e^{0.06}$ D) 1200   E) $1000(1+\frac{6}{4})^4$

9. Use the linear approximation and estimate the size of the error for $\sqrt{4.2}$ using $f(x) = \sqrt{4+x}$.

A) $2 + \frac{0.2}{4}$, $|error| \leq \frac{(0.2)^2}{64}$

B) $2 - \frac{0.2}{4}$, $|error| \leq \frac{(0.2)^2}{64}$

C) $2 + \frac{4.2}{4}$, $|error| \leq \frac{(4.2)^2}{32}$

D) 2, $|error| \leq 0.2$

E) No Solution

10. Find
$$\sum_{k=o}^{\infty} \frac{8}{5^k}$$

A) 10   B) 5   C) $\frac{5}{4}$ D) 8   E) $\frac{8}{5}$

You're Done!!!!!