1. Find the eightieth term of the following sequence:
2, 5/2, 3, 7/2, …

2. If the sum of two numbers is 1 and their product is 1, then the sum of their cubes is:

3. Find the sum of the coefficients of all the terms after $(3x+2y)^5$ is expanded.

4. Calculate $\sum_{k=0}^{10} 3^k$

5. Ms. Wilson gave her algebra students three optional problems for extra credit, , B, C. She calculated that 54% did Problem A. 45% did problem B. 36% did problem C. 12% did problems A and B. 17% did problems B and C. 20% did problems A and C, and 5% did all three. What percentage of the students did not turn in any of the extra credit problems?

6. Express $-\sqrt{3}+i$ in polar form.

7. Find all the vertical asymptotes of the function: $f(x) = \dfrac{-x^3-2x^2+3x}{2x^3-x^2-25x-12}$

8. In a recent year, 389 of the 281,421,906 people in the U.S. were struck by lightning. Estimate the probability that a randomly selected person in the U.S. will be struck by lightening this year.

9. Solve: $x^4-3x^3-20x^2-24x-8=0$

10. Determine all asymptotes of the function $f(x) = \dfrac{3x^2-x-2}{x-1}$

11. A survey is taken on what kind of sports do students like. Each student checks baseball, football, or basketball as a sport they like. More than one pick is permitted. The results are:

Football	Basketball	Baseball	Football & Basketball	Football & Baseball	Basketball & Baseball	All three
42	34	27	15	12	10	7

How many people completed the survey?

12. It is known that homing pigeons fly faster over land than over water. Assume that they fly 10m/sec over land but only 9 m/sec over water. If a pigeon is located at the edge of a straight river 500 meters wide and must fly to its nest, located 1300 meters away on the opposite of the river, what path would minimize its flying time?

13. Find the first partial of:
$f(x,y) = 4x^3 - 3y^2$

14. If $f(x) = \log\left(\frac{1+x}{1-x}\right)$ for -1 < x < 1, then define $f\left(\frac{3x+x^3}{1+3x^2}\right)$ in terms of $f(x)$:

15. The statue of Zeus at Olympia in Greece is one of the Seven Wonders of the World. It is made of gold and ivory. The ivory was found to have lost 35% of its carbon-14. Determine the age of the statue to the nearest year (note: the radioactive element carbon-14 has a half-life of 5750 years).

16. The area of a circle inscribed in a regular hexagon is 100π. Determine the area of the hexagon.

17. Decompose the following fraction into partial fractions: $\frac{7x-1}{6x^2-5x+1}$

18. If two poles 20" and 80" high are 100" apart, then the height of the intersection of the lines joining the top of each pole to the foot of the opposite pole is:

19. Find real numbers x and y such that $3x + 2iy - ix + 5y = 7 + 5i$

20. In how many ways can eight people be seated at a round table?