Beverly Hills High School -- Algebra B -- Quest #3 -- Sections 7.1-7.4 -- 70 points

Show all your work. Be neat and complete. Reduce all fractions. NO negative exponents allowed in final answers. **Pencils only.** All problems are three points each. Partial credit for partial achievement.

Evaluate each expression below.

1) $x^8 \bullet x^3 =$

2) $(-3x^4)^3 =$

3) $(4m^3n^6)(-3m^{-5}n^{-8}) =$

4) $81^{3/4} =$

5) $(3.5 \times 10^6)(8.0 \times 10^7) =$

6) Convert .00000000582 to scientific notation

7) $y^6z^{-5} \bullet y^{-4}z^5 =$

8) $(14t^{-32})^0(-7t^5)^2 =$

9) $\dfrac{-32c^7d^9}{-8c^{-2}d^{11}} =$

10) $2v^{\frac{2}{3}}w^{\frac{5}{6}} \bullet 5v^{\frac{4}{3}}w^{\frac{-1}{3}} =$

11) $\dfrac{28q^5}{-7q^4} =$

12) Convert 9.23×10^7 to decimal notation

13) Use exponents to write $\sqrt[3]{47}$

14) $\left(\dfrac{8}{5}\right)^{-2} =$

15) $\left(\dfrac{12a^6b}{6a^4b^4}\right)^2 =$

16) In the expression $7z^6$, the seven is called the _____.

17) $(3y^2)(5y^4)(-2y^{-7}) =$

18) $\dfrac{(6x^3y^{-2})^2(-2x^{-2}y^3)^2}{(12xy^4)^2} =$

19) $(5^{2/3})^6(25^{-2}) =$

20) $(-14a^6b^{-15} \cdot 35a^7b^{12} \cdot 28a^8b^{19})^0 =$

21) $\left(\dfrac{2x}{3y}\right)^6\left(\dfrac{8x}{6y}\right)^{-2} =$

22) $16\left(\dfrac{2^{-3}}{2^2}\right) =$

23) Four points on this one. The largest swarm of locusts ever observed was in central Kenya in 1954. The swarm covered 200 square kilometers. The average number of locusts in that swarm was about 6×10^7 locusts per square kilometer.

a) About how many locusts were in that swarm (in scientific notation)?

b) There are about 300,000,000 Americans. How many locusts in that one swarm could each and every American have if they were divided evenly among everyone in the US? (Believe it or not, there were about 50 such swarms that year in Kenya, devastating the whole country!)