Math 3050 (Barsamian) Class Drill 4.7: Square Roots of Integers

1) Let $n = 3^{16}7^{4}11^{54}$
What is $\sqrt{n}$?

Is $\sqrt{n}$ rational or irrational?

2) Let $n = 3^{16}7^{5}11^{54}$
What is $\sqrt{n}$?

Is $\sqrt{n}$ rational or irrational?

3) Let n be an integer whose prime factorization in standard form is $n = {p_1}^{16}{p_2}^{4}{p_3}^{54}$.
(That tells us that p_1, p_2, p_1 are primes and that $p_1 < p_2 < p_3$)
What is $\sqrt{n}$?

Is $\sqrt{n}$ rational or irrational?

4) Let n be an integer whose prime factorization in standard form is $n = {p_1}^{16}{p_2}^{5}{p_3}^{54}$.
(That tells us that p_1, p_2, p_1 are primes and that $p_1 < p_2 < p_3$)
What is $\sqrt{n}$?

Is $\sqrt{n}$ rational or irrational?

5) Let n be an integer whose prime factorization in standard form is $n = {p_1}^{e_1}{p_2}^{e_1} \ldots {p_k}^{e_k}$
What is $\sqrt{n}$?

Under what conditions will $\sqrt{n}$ be rational or irrational?

Under what conditions will n be a perfect square?