6. [12 points] In the following problems, support all you answers by stating the test(s) or facts you used to prove convergence or divergence. Show all your work.

a. [4 points] $\displaystyle\sum_{n=1}^{\infty} \frac{\sqrt{n}}{1+n^3}$ Circle your answer: Converges Diverges

b. [4 points] $\displaystyle\sum_{n=1}^{\infty} \frac{1}{2+\cos^2(n)}$ Circle your answer: Converges Diverges

c. [4 points] For which values of a does the series

$$\sum_{n=1}^{\infty} \frac{a^n}{3^n} = \frac{a}{3} + \frac{a^2}{9} + \frac{a^3}{27} + \cdots$$

converge? For the values of a where the series converges, find the sum of the series.