Differentiating and Rational Powers

Differentiate the following functions;

1. $y = \sqrt{x}$

2. $y = \frac{1}{x}$

3. $y = \frac{1}{\sqrt{x}}$

4. $y = \sqrt[3]{x}$

5. $y = \frac{1}{x^2}$

6. $y = \frac{1}{\sqrt[3]{x}}$

7. $y = \frac{3}{x}$

8. $y = 5\sqrt{x}$

9. $y = \sqrt[3]{x^2}$

10. $y = \frac{4}{\sqrt{x^3}}$

11. $y = 5x + \frac{5}{x}$

12. $y = 3x^2 + \frac{3}{x^2}$

13. $y = 3\sqrt{x} + \frac{2}{\sqrt[3]{x}}$

14. $y = \frac{3}{x^2} + \frac{1}{3x^2}$

15. $y = \frac{3}{2\sqrt{x^3}}$

16. $y = \frac{3}{4x^4}$