

Simplify by combining like terms whenever possible.

1a. $f(x) = \frac{x^4}{2} + \frac{x^{-1}}{x^1} + 3x - 500$

b. Find $f'(2)$

2. $y = \frac{-1}{x^2} - \cos x + \frac{\sqrt{x}}{\sqrt[3]{x}}$

3. $y = \frac{\sin x}{3} - 5 \cos x + \frac{5x}{\sqrt[4]{x^5}}$

4. $f(x) = \sqrt{x} - \frac{4}{\sqrt[4]{x}} + 2x - \frac{3x}{\sqrt{x}}$

5a. $y = \frac{4}{x} - \frac{1}{x^3} - \frac{8}{x^8}$

b. Find $f'(2)$

6a. $f(x) = \frac{\sqrt{x}}{3x} - \frac{x^4 + 2x^{\frac{3}{2}} - 4x}{x^{\frac{3}{2}}}$

b. Find $f'(1)$