

Each problem is worth 5 points. Clear and complete justification is required for full credit.

1. Find the most general antiderivative of the function $f(x) = 6\sqrt{x} - \sqrt[6]{x}$.

$$f(x) = 6\sqrt{x} - \sqrt[6]{x}$$

$$f(x) = 6x^{1/2} - x^{1/6}$$

$$F(x) = 4x^{3/2} - \frac{6}{7}x^{7/6} + C$$

Good

2. Find $f(x)$, given that $f'(x) = 1 - 6x$ and $f(0) = 8$.

$$f'(x) = 1 - 6x \quad f(0) = 8$$

$$f(x) = x - \frac{6x^2}{2} + C$$

$$f(x) = x - 3x^2 + C$$

$$f(0) = 0 - 3(0)^2 + C$$

$$8 = 0 - 3(0)^2 + C$$

$$8 = C$$

$$f(x) = x - 3x^2 + 8$$

Great