

No graphing calculators are allowed on this quiz. Please read each question carefully, follow directions and clearly mark your solutions. **Show your work for full credit and don't forget "+C"!**

1. (3 points each) Find the indefinite integral and simplify your answer

(a)

$$\int x^2 + 6\sqrt{x} \, dx = \int x^2 + 6x^{1/2} \, dx$$
$$= \frac{1}{3}x^3 + 6 \cdot \frac{2}{3}x^{3/2} + C$$
$$\boxed{\frac{1}{3}x^3 + 4x^{3/2} + C}$$

(b)

$$\int \frac{12(\ln x)^3}{x} \, dx = \begin{cases} u = \ln x \\ du = \frac{1}{x} \, dx \end{cases}$$
$$= \int 12u^3 \, du = 12 \int u^3 \, du$$
$$= 12 \frac{1}{4} u^4 + C = \boxed{3(\ln x)^4 + C}$$