

1.

$$(a) \int_1^2 x^2 e^{x^3} dx$$

$$u = x^3 \\ du = 3x^2 dx$$

$$= \int_1^8 \frac{1}{3} e^u du$$

$$= \frac{1}{3} e^u \Big|_1^8$$

$$= \frac{1}{3} (e^8 - e)$$

$$(b) \int \sin(5x) dx$$

$$u = 5x \\ du = 5 dx$$

$$= \int \frac{1}{5} \sin(u) du$$

$$= -\frac{1}{5} \cos(u) + C$$

$$= -\frac{1}{5} \cos(5x) + C$$

$$(c) \int x \sec^2(3x^2) dx$$

$$u = 3x^2 \\ du = 6x dx$$

$$= \int \frac{1}{6} \sec^2(u) du$$

$$= \frac{1}{6} \tan(u) + C$$

$$= \frac{1}{6} \tan(3x^2) + C$$

2. Answers will vary based on group's choices.