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Electrical/ Electronics Engineering
ENG 281

$$1.) y_1 = 3e^{2x}; y_2 = 3e^{-x}$$

$$dy = \int_1^2 3e^{2x} dx$$

$$dy = \left[\frac{3e^{2x}}{2} + c \right]_1^2$$

$$= \left[\frac{3e^{2(2)}}{2} + c \right] - \left[\frac{3e^{2(1)}}{2} + c \right]$$
$$= 81.897 - 11.084$$
$$A = 70.813$$

$$y_2 = 3e^{-x}$$
$$dy = \int_1^2 (3e^{-x} + c) dx$$
$$= [-3e^{-x} + c]_1^2$$

$$[-3e^{-2} + c] - [-3e^{-1} + c]$$
$$= -0.406 + 1.104$$
$$= 0.698$$

$$2.) y = \int 2 \sin \frac{\pi}{10} t dx$$
$$dx = 2 + 2t - 2 \cos \frac{\pi}{10} t$$

$$\frac{dx}{dt} = 2 + \frac{2\pi}{10} \sin \frac{\pi}{10} t$$
$$dx = (2 + 2 \frac{\pi}{10} \sin \frac{\pi}{10} t) dt$$

$$dy = \int \frac{-20}{\pi} \cos \frac{\pi}{10} t \times (2 + 2 \cos \frac{\pi}{10} t) dt \Big|_0^{10}$$

$$= \left[\frac{-20}{\pi} \cos \frac{\pi}{10} (10) \times 2(10) - 2 \cos \frac{\pi}{10} (10) \right] - \left[\frac{-20}{\pi} \cos \frac{\pi}{10} (0) \times 2(0) - 2 \cos \frac{\pi}{10} (0) \right]$$

$$= -114.438 - 12.732$$
$$= -127.17$$