Circuit Training – Differential Equations Name _____

Directions: Beginning in cell #1, find the particular solution to the separable differential equation without the aid of technology. To advance in the circuit, answer the question from the new information and call that cell #2. Continue in this manner until you complete the circuit. Note: Attach additional sheets of notebook paper if the boxes are too small for you to communicate good calculus.

Answer: *e*

#1 $\frac{dy}{dx} = 2x,\ y(1) = 7$

Particular solution: _____
To advance in the circuit, find y when x = 2.

Answer: 3

_____ $y' = -4y \quad and\ y(0) = 8.$

Particular solution: _____
To advance in the circuit, find $y(2)$.

Answer: $-2 + 9e^2$

_____ $\frac{dy}{d\theta} = 4y^2 sec^2(2\theta)$ $y\left(\frac{\pi}{8}\right) = 1$

Particular Solution: _____

To advance in the circuit, evaluate $y(\frac{3\pi}{8})$.

Answer: 10

_____ $\frac{dy}{dx} = \frac{x}{y}$, $y(-1) = 8$

Particular Solution: _____

To advance in the circuit, find y when x = 1.

Answer: 8

_____ $\frac{dy}{dt} = -\frac{2t}{y}$, $y = -6$ *when* $t = 0$.

Particular Solution: _____

To advance in the circuit, find t when $y = -3\sqrt{2}$.

Answer: $\frac{1}{5}$

_____ $xy\frac{dy}{dx} = lnx \quad y(1) = -2$

Particular Solution: _____

To advance in the circuit, find x when $y = -\sqrt{5}$.

Answer: -2

_____ $\frac{dW}{dt} = 100t(W+2) \qquad W(0) = 7$

Particular Solution: _____

To advance in the circuit, find $W(\frac{1}{5})$.

Answer: $\frac{8}{e^8}$

_____ $\frac{dA}{dt} = t + 4$; $A(2) = 11$.

Particular Solution: _____

To advance in the circuit, solve $A(t) = -5$.