Differential Equations Practice WS (1-3)

1)

Given the differential equation $\frac{dy}{dx} = -\frac{2x}{y^2}$, find the particular solution, $y = f(x)$, with the initial condition $f(-1) = 3$.

A) $y = \sqrt{-2x + 3}$

B) $y = \sqrt[3]{-3x^2 + 30}$

C) $y = \sqrt[3]{-3x^2 + 24}$

D) $y = \sqrt{-2x + 7}$

E) $y = \sqrt{-3x^2 - 10}$

2) Given the differential equation $\frac{y'}{3-x} = 6y$, find the particular solution, $y = f(x)$, with the initial condition f(0) = 2

A) $y = \sqrt{-\frac{3}{2}x^2 + x + 2}$

B) $y = \sqrt{-3x^2 + 36x + 4}$

C) $y = \ln|18x - 3x^2| + 2$

D) $y = e^{18x-3x^2} + 2$

E) $y = 2e^{18x-3x^2}$

3)

Given the differential equation $\frac{dy}{dx} = \frac{2x-1}{y}$, find the particular solution, $y = f(x)$, with the initial condition $f(-3) = 6$.

4)

What is the particular solution to the differential equation $\frac{dy}{dx} = x^2 y$ with the initial condition $y(3) = e$?

5)

Given the differential equation, $ww' = t^2 sec^2(2t^3)$, find the particular solution , $w = f(t)$, with the initial condition $w(0) = -4$.

6)

Given the differential equation, $y'xlnx - y = 0$, find the particular solution , $y = f(x)$, with the initial condition $f(e) = e$