Serial No.:_____ Student Name:_____ Student Number: _____

Instructor: M. Z. Abu-Sbeih Math 101- Q3 Date: 28-10-2018

SHOW ALL YOUR WORK. NO CREDITS FOR ANSWERES WITHOUT JUSTIFICATIONS

Show all your work. NO credits for answers not supported by work.

1. (7 Points) If $y = \frac{x\, sin^{-1}x}{x+1}$ find y'. (**Do not simplify**)

2. (7 Points) If $y = e^{csc^3 x}$ find y'. (**Do not simplify**)

3. (7 Points) If $tan^{-1}xy + y^2 = 4$ find $\frac{dy}{dx}$ at the point (0,2)

4. (7 Points) Find all values of a and b for which the line $2x + y = b$ is tangent to the parabola $y = a\,x^2$ at $x = 2$.

5. (6 Points) Evaluate the limit if it exists:

$$\lim_{x\to\pi} \frac{\sec x + 1}{x - \pi}$$

6. (6 Points) Evaluate the limit if it exists:

$$\lim_{x\to 1} \frac{\tan(x-1)}{x^2 + x - 2}$$