DERIVATIVES COMPETENCY EXAM (PRACTICE TEST)

Directions:
• You have one hour to finish this exam.
• No calculators or notes are allowed.
• In order to pass this exam, you cannot miss more than two problems.
• There is no partial credit.

Name: Date:

Beginning of the exam

Find the derivatives of the following functions:
(1) \( y = x^n \) where \( n \) is a nonzero constant.

(2) \( y = \sin x \).

(3) \( y = \tan x \).
(4) \( y = \sec x. \)

(5) \( y = \arcsin x. \)

(6) \( y = \arctan x. \)

(7) \( y = e^x. \)

(8) \( y = \ln x. \)

(9) \( y = a^x \) where \( a > 0 \) is a constant.
(10) \( y = 3x^3 + x^2 - 3 \).

(11) \( y = \sqrt[3]{x^2} \).

(12) \( y = \frac{1}{\sqrt{x}} \).

(13) \( y = x \csc x \).

(14) \( y = \frac{x^2 - 1}{\cot x} \).

(15) \( y = \arccos(x^2) \).
(16) \( y = \cos(x^2 - 3) \).

(17) \( y = \ln(\pi) \).

(18) \( y = 6^{x^2+3} \).

(19) \( y = \ln(\arcsin x) \).

(20) \( y = \log_7(x^2 + 1) \).

End of the exam