

## 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**