Calculus 1000A — Fall 2015
Quiz 2

Date: Oct. 21, 2015 **Name:** _____
Duration: 30 minutes. **Section: 007**

This is a multiple-choice test. Circle the best answer. Correct answers will earn you 5 points each. You can score a maximum of 20 points.

Problem 1. If $f(x) = \sqrt[3]{\ln(1+x^3)}$, then which of the following statements are false?

(*i*) The domain of $f(x)$ is $(-1, \infty)$.

(*ii*) The range of $f(x)$ is $(-\infty, \infty)$.

(*iii*) $f(x)$ is one-to-one in its domain.

(*iv*) $f^{-1}(x) = \left(e^{x^3} - 1\right)^{\frac{1}{3}}$.

Answer. (*A*) Statements (*i*) and (*ii*). (*B*) Statements (*iii*) and (*iv*). (*C*) Only statement (*iv*). (*D*) Only statement (*i*). (*E*) None of statements (*i*) to (*iv*).

Problem 2. If $2^{x+y} = x^2$, then $y' =$

Answer. (*A*) $\dfrac{2}{(\ln 2)x} - 1$. (*B*) $\dfrac{2}{(\ln 2)x} + 1$. (*C*) $\dfrac{1}{(\ln 2)x}$. (*D*) $\dfrac{2x}{2^x} + \ln 2$. (*E*) None of the above.

Problem 3.

$$\lim_{x\to-\infty}\frac{1+\sqrt{x^2}+\sqrt[5]{x}}{x^{\frac{1}{3}}}=$$

Answer. (A) 0. (B) -1. (C) $-\infty$. (D) ∞. (E) 1.

Problem 4. Arrange the following in ascending order:

$$a=2\sin(\arccos(-\tfrac{1}{2})),\qquad b=\frac{d}{dx}\Big(2\sin(\arccos(-\tfrac{1}{2}))\Big)\qquad c=\log_3(2\sin(\arccos(-\tfrac{1}{2}))).$$

Answer. (A) $a<b<c$. (B) $a<c<b$. (C) $b<a<c$. (D) $b<c<a$. (E) None of the above.