Name: _____ Date: _____

AP Calculus AB: More Derivative Multiple Choice Practice Ms. Loughran

1. If $g(x) = 3\tan^2(2x)$, then $g'\left(\frac{\pi}{8}\right)$ is

   (A) 6 (B) $6\sqrt{2}$ (C) 12 (D) $12\sqrt{2}$ (E) 24

2. Given $y = 3e^{-2x}$, what is an equation of the normal line to the graph at $x = \ln 2$?

   (A) $y = \frac{2}{3}(x - \ln 2) + \frac{3}{4}$

   (B) $y = \frac{2}{3}(x + \ln 2) - \frac{3}{4}$

   (C) $y = -\frac{3}{2}(x - \ln 2) + \frac{3}{4}$

   (D) $y = -\frac{3}{2}(x - \ln 2) - \frac{3}{4}$

   (E) $y = 24(x - \ln 2) + 12$

3. If $f(x) = \ln(\ln(1-x))$, $f'(x)$ is

   (A) $-\frac{1}{\ln(1-x)}$ (B) $\frac{1}{(1-x)\ln(1-x)}$ (C) $\frac{1}{(1-x)^2}$

   (D) $-\frac{1}{(1-x)\ln(1-x)}$ (E) $-\frac{1}{\ln(1-x)^2}$

4. $\lim_{h\to 0} \frac{\tan\left(\frac{\pi}{6}+h\right) - \tan\left(\frac{\pi}{6}\right)}{h} =$

   (A) $\frac{\sqrt{3}}{3}$ (B) $\frac{4}{3}$ (C) $\sqrt{3}$ (D) 0 (E) $\frac{3}{4}$

5. $\lim_{h\to 0}\dfrac{\sin\left(\dfrac{5\pi}{6}+h\right)-\dfrac{1}{2}}{h}=$

(A) $\dfrac{\sqrt{3}}{2}$ (B) $\dfrac{1}{2}$ (C) 0 (D) $-\dfrac{1}{2}$ (E) $-\dfrac{\sqrt{3}}{2}$

6. Find the derivative of $g(x)=5\sin^2(6x)+5\cos^2(6x)$ with respect to x.

(A) $30\cos^2(6x)-30\sin^2(6x)$
(B) $5\cos^2(6x)-5\sin^2(6x)$
(C) $120\sin(6x)\cos(6x)$
(D) 30
(E) 0

7. Let $f(x)=5x\sec x+x^3\cos x+17\pi$, find $\dfrac{d}{dx}f(x)$.

(A) $5\sec x\tan x+3x^2\cos x+17\pi$
(B) $5\sec^2 x-x^3\sin x$
(C) $5\sec x\tan x-3x^2\sin x$
(D) $5\sec x+5x\sec x\tan x+3x^2\cos x-x^3\sin x$
(E) $5\sec x+5x\sec x\tan x-3x^2\cos x+x^3\sin x+17\pi$

8. $\dfrac{d}{dx}(\ln e^{2x})=$

(A) $2x$ (B) 2 (C) $\dfrac{1}{e^{2x}}$ (D) $\dfrac{2}{e^{2x}}$ (E) $\dfrac{2x}{e^{2x}}$

9. If $f(x)=e^{4\ln(x^3)}$, then $f'(x)=$