Calculus II. Quiz 0. Name Key Time

Show all work on this page for full and/or partial credit. Use a calculator to find the decimal answer, rounded to two decimal places. Angles are always in radians for Calculus. Put a box around both answers!

For each problem, find $f(1)$ and $f'(1)$.
Example: $f(x) = 3\sin 2x$

$\boxed{f(1) = 3\sin(2\cdot 1) = 2.73}$ $f'(x) = \boxed{6\cos 2x}$ $\boxed{f'(1) = 6\cos(2\cdot 1) = -2.50}$

1. $f(x) = \sin^2(\pi x)$

$f(1) = \sin^2 \pi = \boxed{0}$ $f'(x) = \boxed{2\sin(\pi x)\cos(\pi x)\pi}$ $f'(1) = \boxed{0}$

2. $f(x) = \ln 3x + -x^2$

$f(1) = \ln 3 + -1$
$= \boxed{0.098} \approx \boxed{0.1}$

$f'(x) = \boxed{\frac{1}{3x}(3) - 2x}$
$= \frac{1}{x} - 2x$

$f'(1) = \frac{1}{1} - 2$
$= \boxed{-1}$

3. $f(x) = (\ln 3)x$

$f(1) = (\ln 3)1$
$= 1.098 \approx \boxed{1.10}$

$f'(x) = \boxed{\ln 3}$

$f'(1) = \ln 3$
$= 1.098 \approx \boxed{1.10}$

4. $f(x) = 2^{x^3}$

$f(1) = 2^1 = \boxed{2}$

$f'(x) = \boxed{2^{x^3}(\ln 2)(3x^2)}$

$f'(1) = 2^1(\ln 2)3$
$= \boxed{4.16}$

5. $f(x) = (2^x)^3 = 2^{3x} = 8^x$

$f(1) = (2^1)^3 = \boxed{8}$

$f'(x) = \boxed{3(2^x)^2 2^x \ln 2}$
$= 3(\ln 2)2^{3x}$

$f'(1) = 3\cdot 2^2 \cdot 2\ln 2$
$= \boxed{16.64}$