score	possible	problem
	15	1
	30	2
	25	3
	30	4
	100	

Name: _____
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Work in groups of 3 or 4. Show your work. Aknowledge any help on these specific problems.

/15 1. Let $f(x) = 3 + x^2 + \tan(\pi x/2)$ on the domain $-1 < x < 1$. Find $\left(f^{-1}\right)'(3)$.

2. Compute the following derivatives:

/15 (a) $f(x) = \sin(1) + 2^x + x^3 + x^{1/4} + 5\tan(x) + \ln(x) + \log_4(x) + e^x \Rightarrow f'(x) =$

/15 (b) $f(x) = \left(x^4 + 2x\right)\left(\log_3(\log_5(7x))\right) \Rightarrow f'(x) =$

/25 3. Use logarithmic differentiation to find the derivative of

$$y = \frac{x^x \sin(2x)(x^5 - 7x)^6}{(\sqrt{x^9 + 1})3^x}$$

/30 4. Find the exact value of each expression. Explain how you got it or illustrate with a triangle. (The explanation "google said so" is not good enough.)

(a) $\sin^{-1}(\sqrt{3}/2) =$

(b) $\cos^{-1}(-1) =$

(c) $\arctan(1) =$

(d) $\sin^{-1}(1/\sqrt{2}) =$

(e) $\tan(\arctan(10)) =$

(f) $\sin^{-1}(\sin(7\pi/3)) =$