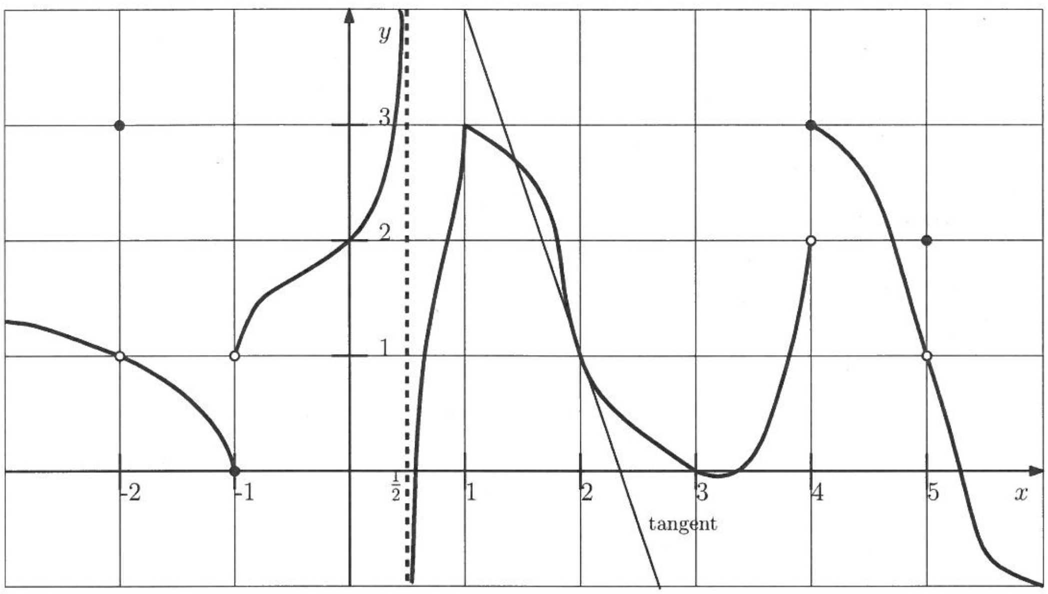
Math 1210: Quiz #4 **Fall 2017**

Name:	A#:	Section:

[8] 1. Let f be a function whose graph of $y = f(x)$ is given below.



Fill in the following.

(a) List all x where f is not continuous: -2, -1, ½, 4, 5

(b) List all x where f is continuous, but not differentiable: 1

(c) List all x where f is right-continuous, but not continuous: 4

(d) $\lim_{x \to 2} (f(3x-1) + (3x-1))^2 =$ $(1+5)^2 = 36$

(e) $\lim_{x \to 4} f(ln(e^{x-1})) =$ 0

(f) $f'(2) =$ -3

(g) If $g(x) = x^2 f(x)$, then $g'(2) =$ $4 + 4 \times (-3) = -8$ $g'(x) = 2x f(x) + x^2 f'(x)$

(h) If $h(x) = f(2x)$, then $h'(1) =$ $2 \times (-3) = -6$ $h'(x) = 2f'(2x)$

v4.EF

[4] 2. Find the equation of the tangent line to $y = x^2 - 2x + 3$ at $x = 1$.

$f'(x) = 2x - 2 \longrightarrow f'(1) = 2 - 2 = 0$

$$\left.\begin{array}{l} \text{slope} = 0 \\ f(1) = 1 - 2 + 3 = 2 \end{array}\right\} \Rightarrow y = \underset{0}{\cancel{m}}x + b = b$$

equation: $\boxed{y = 2}$

[8] 3. Compute the derivative. **Do not simplify your answer.**

(a) $\dfrac{d}{dx}\left(\cos(x) + \dfrac{1}{\sqrt{x}} + e^{2x+1} + \sin(3)\right)$

$$= \frac{d}{dx}(\cos(x)) + \frac{d}{dx}\left(\frac{1}{\sqrt{x}}\right) + \frac{d}{dx}\left(e^{2x+1}\right) + \frac{d}{dx}(\sin(3))$$

$$= -\sin(x) + \frac{\frac{-1}{2\sqrt{x}}}{x} + 2e^{2x+1} + 0$$

(b) $\dfrac{d}{dt}\left(\dfrac{\tan(t+1)}{e^{2t}+1}\right) = \dfrac{\left(e^{2t+1}\right)\frac{d}{dt}(\tan(t+1)) - \tan(t+1)\frac{d}{dx}(e^{2t}+1)}{(e^{2t}+1)^2}$

$$= \frac{\left(e^{2t+1}\right)\left(\sec^2(t+1)\right) - (\tan(t+1))(2e^{2t})}{(e^{2t}+1)^2}$$