MTH 1125 (12pm Class) Test #4

FALL 2017

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Instructions. Show CLEARLY how you arrive at your answers.

1. Compute: $\int \left(12x^3 + 9x^2 - 6x + 3 + \frac{9}{2}\sqrt{x}\right) dx =$

2. Compute: $\int \left(8x^2 + 16x + 4\right)^5 (4x + 4)\, dx =$

3. Compute: $\int \left(7\cos(x) - 3\csc^2(x) + 3\sec(x)\tan(x)\right) dx =$

4. Compute: $\int \cos\left(3x^5 + 5x\right)\left(3x^4 + 1\right) dx =$

5. $f(x) = \frac{1}{2}x^4 + 2x^3 - 9x^2 - 6x + 6$. [1]Determine the intervals on which $f(x)$ is concave up/concave down and [2]Identify the points of inflection.

6. Draw a graph of $f(x)$, given that $f(x)$ has the properties given in the table below:

$f'(x) > 0$ on the interval $(-\infty, -2)$		$\lim_{x \to -\infty} f(x) = -\infty$
	$f''(x) > 0$ on the interval $(-\infty, -2)$	
$f'(x) < 0$ on the interval $(-2, 0)$		
	$f''(x) < 0$ on the interval $(-2, 2)$	
$f'(x) > 0$ on the interval $(0, 2)$		
	$f''(x) > 0$ on the interval $(2, \infty)$	
$f'(x) < 0$ on the interval $(2, \infty)$		$\lim_{x \to +\infty} f(x) = -\infty$