

MTH 1125 (9am Class) Test #4

FALL 2017

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Name _____

Instructions. Show CLEARLY how you arrive at your answers.

1. Compute: $\int (16x^3 + 12x^2 - 8x + 4 + 6\sqrt{x}) dx =$

2. Compute: $\int (6x^2 + 12x + 4)^7 (4x + 4) dx =$

3. Compute: $\int (3 \sin(x) - 5 \sec^2(x) + 4 \csc(x) \cot(x)) dx =$

4. Compute: $\int \cos(5x^3 + 9x) (5x^2 + 3) dx =$

5. $f(x) = x^4 - 2x^3 - 12x^2 - 6x + 6$. ¹Determine the intervals on which $f(x)$ is concave up/concave down and ²Identify the points of inflection.

6. Sketch a graph of $f(x)$ if the following conditions hold:

$f'(x) < 0$ on the interval $(-\infty, -3)$		$\lim_{x \rightarrow -\infty} f(x) = +\infty$
	$f''(x) > 0$ on the interval $(-\infty, -2)$	
$f'(x) > 0$ on the interval $(-3, 0)$		
	$f''(x) < 0$ on the interval $(-2, 2)$	
$f'(x) < 0$ on the interval $(0, 3)$		
	$f''(x) > 0$ on the interval $(2, \infty)$	
$f'(x) > 0$ on the interval $(3, \infty)$		$\lim_{x \rightarrow +\infty} f(x) = +\infty$