Math 1215: Quiz #1 **Winter 2018**

Name: SOLUTIONS	A#:	Section:

1. Compute $\int \left(\frac{3}{x} - \frac{x}{4} + 5\right) dx$

$= 3\int \frac{1}{x}\,dx - \frac{1}{4}\int x\,dx + \int 5\,dx$

$= \boxed{3\ln|x| - \frac{1}{8}x^2 + 5x + C}$

2. Find all functions $f(x)$ that satisfy $f'(x) = \sqrt{x} - e^x$ and $f(0) = 1$.

$f(x) = \int (\sqrt{x} - e^x)\,dx$

$= \frac{2}{3}x^{3/2} - e^x + C$

Since $f(0) = 1$ we get $1 = \frac{2}{3}(0)^{3/2} - e^0 + C$

$\Rightarrow 1 = 0 - 1 + C$

$\Rightarrow C = 2$

So $\boxed{f(x) = \frac{2}{3}x^{3/2} - e^x + 2}$

v1.1