Honors Math 182 Bonus Quiz 11 Version A

The score on this quiz will be used to replace one score from among
your homework or quiz scores, whichever provides greater benefit.

1. Find the following anitiderivates:

(i) $\int (\sin x)(\sin 2x)\, dx$

(ii) $\int \dfrac{2x^2}{(x-1)(x+3)}\, dx$

(iii) $\int x \ln(x^2 + 1)\, dx$

2. Find the following limits:

(i) $\displaystyle \lim_{x \to 0} \frac{\sin x - x \cos x}{x^3}$

(ii) $\displaystyle \lim_{x \to 0} \frac{\ln(1 + x^2) - \arctan^2 x}{x^4}$

(iii) Use either Newton's method, the Taylor theorem or continued fractions to obtain a sequence of rational numbers that converge to $\sqrt{5}$.