9 Jan 2014 Math 3 Practice Problems

1. Let $f(x) = \dfrac{1}{x^2 - 4}$, $g(x) = \dfrac{6}{x}$. What is the domain of $f(g(x))$? Find all vertical and horizontal asymptotes of $f(g(x))$.

2. Solve: $\sin(2x) = \frac{1}{2}$ on $[0, 2\pi)$

3. Solve: $7 + 15e^{1-3x} = 10$

4. Solve: $3 + 2\ln\left(\dfrac{x}{7} + 3\right) = -4$

5. Simplify: $\ln x^3 y^4 z^5$