**Question 1 [10 points]:**
Find the quotient $q(x)$ and remainder $r(x)$ when the polynomial $f(x) = 14x^4 - 12x^2 + 6$ is divided by $d(x) = x^2 - 1$. Express your answer in the form $f(x) = d(x)q(x) + r(x)$.

**Question 2:**

**(a)[5 points]** Find the remainder upon dividing $5x^3 + x^2 - 4x - 6$ by $x + 1$.

**(b)[5 points]** Let $f(x) = x^7 - 3x^5 + 2x^3 - x + 10$. Find $f(5)$. (It is easiest to do this by synthetic division.)

**Question 3 [10 points]:** Factor completely:

$$x^4 - 6x^3 + 4x^2 + 6x - 5$$

**Question 4:**

**(a)[3 points]** Convert $875^\circ$ to radians.

**(b)[3 points]** Find the exact value of

$$\sin\left(\frac{9\pi}{4}\right)\cos\left(\frac{-7\pi}{3}\right)$$

**(c)[4 points]** Find all angles $0 \leq t < 2\pi$ such that $\cos(t) = -\sqrt{2}/2$

**Question 5:**

**(a)[7 points]** Neatly sketch the graph of $y = 2\sin(2x) - 3$. Show the scale on the $x$ and $y$ axes.

**(b)[3 points]** State the amplitude, period and phase shift of the function from part (a).