

Pre-Calculus Homework #18

- 1) Decompose $\frac{-9x^2 - 44x + 87}{(2x^2 + 5x - 12)(x - 3)}$ into partial fractions.
- 2) Solve the following problem using matrices and Cramer's rule. In her pre-calculus class, Nina takes three major tests. Two hundred twenty-three less than triple the sum of the first and third tests is five more than triple her middle test grade. Six times the difference between the middle and first test grades is sixteen less than her third test grade. If the sum of her three test grades is two hundred seventy, what are Nina's three test grades?
- 3) Decompose $\frac{3x^3 - 46x^2 + 361}{x^2 - 13x - 30}$ into partial fractions.
- 4) Solve the following system of equations using matrices and the inverse:
$$\begin{aligned}3a + 2b - 8c &= 10 \\-4a - 5b + 3c &= -5 \\2a - 3b - 5c &= -7\end{aligned}$$
- 5) Decompose $\frac{-12x^2 - 43x + 10}{(x^2 + 4)(x - 6)}$ into partial fractions.
- 6) Graph, find the absolute value, and convert $-10\sqrt{3} + 10i$ into polar form.
- 7) Graph, find the absolute value, and convert $6(\cos 120^\circ + i \sin 120^\circ)$ into rectangular form.
- 8) Graph, find the absolute value, and convert $-5i$ into polar form.
- 9) Graph, find the absolute value, and convert $-7(\cos \frac{\pi}{3} + i \sin \frac{\pi}{3})$ into rectangular form.
- 10) Graph, find the absolute value, and convert $\frac{-9}{2} - \frac{9\sqrt{3}}{2}i$ into polar form.
- 11) Graph, find the absolute value, and convert $-3(\cos(\frac{-3\pi}{4}) + i \sin(\frac{-3\pi}{4}))$ into rectangular form.

- 12) Convert to polar form and then simplify $(1+i\sqrt{3})(1+i)$
- 13) Convert to polar form and then simplify $\frac{3-3\sqrt{3}i}{\sqrt{3}-i}$
- 14) Simplify $(-\sqrt{3}+i)^5$ and write your answer in polar form.
- 15) Simplify $(\frac{\sqrt{3}}{2}+\frac{1}{2}i)^{10}$ and write your answer in rectangular form.
- 16) Find (in rectangular form), and graph, the fourth roots of i .
- 17) Find (in polar form), and graph, the sixth roots of 1.
- 18) Solve $x^6+64=0$ and put your answers in rectangular form.
- 19) Solve $x^5+\sqrt{3}+i=0$ and put your answers in polar form.
- 20) Solve $x^{12}+531441=0$ and put your answers in rectangular form.